DOCUMENT RESUME

ED 156 035 HE 010 151

AUTHOR	Fenske, Robert H., Ed.; Staskey, Paul J., Ed.
TITLE	Research and Planning for Higher Education.
INSTITUTION	Association for Institutional Research.
PUB DATE	78
NOTE	221p.; Proceedings of the Annual Forum of the Association for Institutional Research (17th, Montreal, Quebec, May 1978); Not available in hard copy due to marginal legibility of original
AVAILABLE FROM	AIR, 314 Stone Building, Florida State University, Tallahassee, Florida 32306
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	Administrator Evaluation; College Administration; College Choice; College Faculty; *College Planning; College Students; Conference Reports; Educational Finance; Evaluation Criteria; Evaluation Methods; Faculty Development; *Higher Education; *Institutional Research; Management Information Systems; Models; Organizational Development; Policy Formation; *Post Secondary Education As a Field of Study; Program Evaluation; *Research Methodology; Resource Allocations; Simulation; Student Characteristics; University Administration
IDENTIFIERS	*Educational Outcomes

ABSTRACT

Forty-four papers are collected in this volume and categorized: invited papers on research and planning for higher education; organizational analysis; finance and resource allocation; program and outcomes analysis; modeling; evaluation; and studies of faculty and students. Abstracts of additional papers are included. (MSE)

Reproductions supplied by EDRS are the best that can be made from the original document.

ED156035

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
AIR
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

RESEARCH AND PLANNING FOR HIGHER EDUCATION

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

17th Annual Forum
Montreal, Quebec

HE010151

The Association for Institutional Research

17th ANNUAL FORUM

THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

May 8–12, 1977
Montreal, Quebec

EXECUTIVE COMMITTEE

James W. Firnberg, President (Louisiana State University System)
Warren W. Gulko, Vice President (University of Massachusetts)
Bernard S. Sheehan, Past President (University of Calgary)
Alton L. Taylor, Treasurer (University of Virginia)
William L. Tetlow, Secretary (University of British Columbia)
Edith H. Carter, Member-at-Large (New River Community College)
F. Craig Johnson, Member-at-Large (Florida State University)
Marvin W. Peterson, Member-at-Large (University of Michigan)
Gloria D. Scott, Member-at-Large (Texas Southern University)

PROGRAM COMMITTEE

Warren W. Gulko, Chairperson (University of Massachusetts)
All Members of the Executive Committee

Contributed Papers Selection

James S. Martin, Chairperson (University of Colorado)
W. Keith Evans (Johnson County Community College)
Lawrence R. Ladd (Boston University)
Barry L. Snowden (Athabasca University)

Special Interest Group Sessions

William F. Lasher, Coordinator (University of Texas at Austin)

Workshop Sessions

F. Craig Johnson, Coordinator (Florida State University)

Evaluation

Molly C. Broad, Chairperson (Syracuse University)

Local Arrangements

Sheila Sheldon, Chairperson (McGill University)
Charles H. Belanger (Université de Montréal)
Ann Kitching (Dawson College)
J. P. Petolas (Concordia University)
John Speed (John Abbott College)
Richard Stock (Vanier College)
James Whitelaw (Concordia University)
Fred H. Wise, Forum Photographer (Old Dominion University)

Program Staff

Lynne Beaudoin, Elaine Jayne, Mary Ellen Kelly, Janet McMahon, Ken Somers, and Carol Young

Host Institutions

Concordia University, Dawson College, John Abbott College, McG[illegible]niversity,
SUNY/Albany, Université de Montréal, Université du Québec à Montréal, and Vanier College

continued on inside back cover)

Annual Forums on Institutional Research

1963—The Role of Institutional Research in Planning
1964—A Conceptual Framework for Institutional Research
1965—Design and Methodology in Institutional Research
1966—Research on Academic Input
1967—The Instructional Process and Institutional Research
1968—Institutional Research and Academic Outcomes
1969—The Challenge and Response of Institutional Research
1970—Institutional Research and Communication in Higher Education
1971—Institutional Research and Institutional Policy Formulation
1972—Reformation and Reallocation in Higher Education
1973—Tomorrow's Imperatives Today
1974—Public Policy: Issues and Analyses
1975—Information for Decisions in Postsecondary Education
1976—Conflicting Pressures in Postsecondary Education
1977—Research and Planning for Higher Education

Copyright © 1978 by the Association for Institutional Research

Preface and Acknowledgements

This issue of the Association for Institutional Research Forum *Proceedings* represents a point of demarcation in the history of the publication activities of the Association. As the last of its type, it marks the end of a series that began in 1963.

Beginning with the *Proceedings* for the 1978 Forum in Houston, this publication will more closely correspond to the generally accepted meaning of the word *proceedings*, as it will be a chronicle of the salient events at the Forum rather than a collection of selected and reviewed papers.

The *Proceedings* have, in the past, served a most useful purpose in providing an accumulating base of professional writings for this growing field. Results of selection procedures have varied over the years, from inclusion of all papers presented to recent rejection of approximately 40 percent as the rising costs of publication correlated with an increasing volume of papers of steadily improving quality. Clearly, many papers in recent years have had to be excluded that would have been published in earlier issues. This is, of course, regrettable, yet it is, at the same time, a sign of growth and maturity of our profession.

At this writing, the content and format of the new *Proceedings* series has yet to be fully determined and the varied new opportunities and forms of publication for papers presented at the Forum are just being formalized.

This Preface is an especially appropriate place to acknowledge the past contributions of *Proceedings* editors who gave, without remuneration, countless hours (and too many evenings and weekends) to one of the most thankless tasks in all of professional life. These editors, beginning with the editor of the very first *Proceedings* in 1963, L. Joseph Lins, include also Clarence H. Bagley (1964, 1965, 1966), Galen N. Drewry (1967), Cameron Fincher (1968, 1969), Patric[illegible] S. Wright (1970), Clifford T. Stewart (1971, 1972), Robert L. Cope (1973, 1974, 1975), Robert H. Fenske (1976, 1977), and Paul J. Staskey (coeditor, 1977).

The stimulating setting of Montreal and the ambiance of the 1977 Forum resulted in the high quality of papers presented there and make this *Proceedings* an auspicious issue with which to end the current series. The Forum theme, Research and Planning for Higher Education, is reflected in the organization of the papers in this collection.

This is the first *Proceedings* with a coeditor, and the senior editor wishes to thank Paul J. Staskey who, along with Jean Chulak at the AIR executive office, helped make this quality publication possible. In addition, Paul has agreed to carry forward his contribution by editing the first of the forthcoming new series of proceedings.

A final and heartfelt acknowledgement is due the excellent group of reviewers who carried out the difficult task of selection from a truly outstanding group of papers submitted for review. These include W. Sam Adams, W. Keith Evans, Arthur L. Gillis, Paul E. Kunkel, Lawrence R. Ladd, J. Stanley Laughlin, James S. Martin, Marily McCoy, Barry L. Snowden, Joan S. Stark, Lois E. Torrence, and Risdon J. Westen.

Robert H. Fenske
Arizona State University

1978

Paul J. Staskey
Northern Arizona University

Table of Contents

INVITED PAPERS ON RESEARCH AND PLANNING FOR HIGHER EDUCATION

Opening Remarks: The Universities and International Development
Michael K. Oliver 1

Institutional Research 1977: Progress and Promise
James W. Firnberg 5

A Chief Executive Officer's View of Institutional Research
Stanley O. Ikenberry 9

Central Authority versus Campus Autonomy: The Great Debate
Emmett B. Fields, Robert B. Mautz, and Ben Lawrence 11

ORGANIZATIONAL ANALYSIS

The Impact of Planning Systems on Managing and Staffing an Institutional Research Office
Marilyn K. Brown and John L. Yeager 17

The Institutional Research Office: Report Factory or Information Clearinghouse
Charles H. Bryson 21

Planning for Institutional Research in Kuwait
F. Craig Johnson 25

OECD's Programme on Institutional Management in Higher Education
Paul M. LeVasseur 29

Getting Information into Community College Decisions: Strategies, Impact, and Implications
Gary A. Rice 33

Information Requirements for Strategic Planning
Donald L. Shirey and Mary Ann Kissel 39

FINANCE AND RESOURCE ALLOCATION

Allocation of State Funds on a Performance Criterion: Acting on the Possible While Awaiting Perfection
E. Grady Bogue and William E. Troutt 45

Calculating the Economic Multiplier for Local University Spending
Charles D. Salley 49

The Lust for Efficiency: A Downhome Story of the Implications of Zero-Based Budgeting
Cameron Fincher 55

Student Charges at Twenty Major Universities: Can the Data Be Compared?
Joe L. Saupe and Russell E. Blagg 59

Measuring Institutional Financial Health
Richard E. Anderson 63

Budget Formulation Based on Institutional Planning
W. Sam Adams 69

The Impact of Federal Funding of University Research on Graduate Education and Research
Jean Elizabeth Girves 73

PROGRAM AND OUTCOMES ANALYSIS

The Three-Year Findings of the Florida Technological University Time-Shortened Degree Program
D. R. Coleman and J. R. Bolte 77

Planning and Higher Education in Brazil
Thomas E. Croope and Louis C. Vaccaro 83

Research and Planning through Department/Program Review: A University's Experience
Joseph L. Gubasta 87

Translating Goals into Measurable Objectives: Research Studies and Practical Procedures
Leonard C. Romney and Sidney S. Micek 93

Exploratory Analyses of a Large Data Base: A Study of American Medical Schools
Charles R. Sherman and Michael G. McShane 97

The Ecology of Academic Programming: A Methodology for Analysis of Academic Program Offerings on a Statewide Basis
S. V. Martorana and Eileen Kuhns 105

Institutional Research: A Needed Data Source for Continuing Education
Suzanne W. Morse and Alice A. McWilliams 109

MODELING

A Model for the Review and Abandonment of Academic Programs in Postsecondary Education
Joseph E. Gilmour, Jr., and Leland L. Beik 115

Managing in Equilibrium: The Roles of Planning and Institutional Research in the Steady-State
Dwight C. Smith, Jr., and Wendell G. Lorang, Jr. 121

A Conceptual Model for Evaluating Public Service Activities
Robert E. Sellers and Larry G. Jones 125

Why Not "Indicators" for Postsecondary Education?
Melvin D. Orwig and Dennis P. Jones 131

Simulation Models for Planning in European Higher Education
K. M. Hussain 135

Policy Research and Analysis: The Choice of Models for Institutional Research
Cameron Fincher 141

Recent Advances in Economic Theory: Their Relevance to Educational Policy
Patricia Burdett 147

Preliminary Tryouts of the NCHEMS Outcomes Structure at Four Colleges
Oscar T. Lenning and Edward G. Lundin 151

Management Information Systems and Simulation Models: To Buy or Not To Buy?
Charles H. Farmer, Katherine H. Frame, Richard A. Priest, and John Ozment 157

EVALUATION

A Framework for Evaluating Institutional Planning
Mark D. Johnson and Harold G. Richard 161

Organizational Analysis—A New Role for Institutional Research
Robert J. Parden 165

The Development of Evaluative Procedures for the Redevelopment of Criminal Justice Educational Curricula
T. Kenneth Moran, James C. Berger, and Janice R. McKenzie 169

The Outcomes of Higher Education: To Measure or Not To Measure
Ben Lawrence 175

Program Evaluation Conducted through an Office of Institutional Research: An Approach, Some Results, and Many Implications
Barry Greenberg 179

Evaluation of Community College Administrators
Phil Shragge 183

STUDIES OF FACULTY AND STUDENTS

Assessing Institutional Faculty Growth and Development Dynamics
Violet A. Towne and Robert G. Simerly 189

An Examination of the Uses of Five Measures in Determining Faculty Work Load
Ralph E. Henard 195

Measuring Faculty Attitude toward Faculty Development in Academic Planning
Philip C. Winstead 201

Comparing Educational Processes for Improved Student Choice
Joan S. Stark, Judith M. Leahy, and Jane E. Milley 205

The Relative Importance of Initial Student Characteristics and the Freshman Experience of College in Voluntary Attrition
Patrick T. Terenzini and Ernest T. Pascarella 213

The Usefulness of Administrative Planning and Management Information for Prospective Students
Oscar T. Lenning and Edward M. Cooper 219

ABSTRACTS OF ADDITIONAL PAPERS 225

OPENING REMARKS: THE UNIVERSITIES AND INTERNATIONAL DEVELOPMENT

Michael K. Oliver, President
Carleton University

The university has become its own subject of research. You are the people who study it. You have not the same freedom as other university researchers, for you usually cannot frame the questions you answer. Someone else does that—a president or rector or vice-chancellor, or a senate committee, or most often, a government department, a grants committee, or a committee of the legislature. But sometimes (quite often, if you are good at your job) you get to ask your own questions. When that chance comes, it is worthwhile having important questions in mind. This morning, I want to suggest to you some themes that I think are important.

First, I will say something about the internationalization of the university. Secondly, I will touch on the place universities may have in an unequal world where inequalities seem to be growing. Finally, I will turn to some questions of university strategy.

The Internationalization of the University

For a long time after it was invented, the university stayed put. Bologna and Paris were founded in the late 12th Century, Oxford and Cambridge in the 13th Century, and Charles University in Prague a little later. By the fifteenth century, universities had crept over most of Europe. It took two more centuries for them to reach North America. During the nineteenth century, they spread into South and Central America, to the Philippines, to India, to Australia, and to New Zealand. In the twentieth century, they exploded, and now they are almost everywhere. In Africa, south of the Sahara (excluding South Africa and Rhodesia), there were only four institutions of higher education prior to 1950; by 1976 there were 38 universities. Nigeria alone has immediate plans for seven more universities or university colleges.

Why and how do universities come into being, and how do they evolve? To answer these questions for all times and all places would require a boldness in generalization that most of us luckily lack. Nevertheless, I was intrigued by Frank H. Bowles' lesser, but still somewhat breathtaking, theory of educational development applying to developing nations on all continents. The five stages he identifies may, indeed, be relevant to the older, slower patterns for university evolution of the past.

Stage I sees the evolution of a national system of education which must precede the establishment of universities. Primary schools, post-primary vocational schools, teacher-training schools, and secondary schools are created. In all but a handful of cases the schools act more as sieves to strain out an elite than as propagators of learning to a mass public. At the end of six to eight years of primary school, examinations determine the small fraction who will go on and sort out the survivors into the privileged few who will go to secondary school (which is both a vital direct route to national leadership and, for a tiny handful, the means of access to overseas universities), the less fortunate who will take one to four years of general education to become teachers, and the least fortunate who find their way into undermanned, underequipped, low prestige technical and vocational schools.

Stage II is marked by the establishment of higher education, usually through some of the secondary schools becoming first colleges and then universities; some of the teacher-training institutes becoming teacher colleges; and more rarely, some of the technical and vocational schools becoming engineering institutes. Universities at this stage are staffed largely by insecure, uncommitted expatriates jostled by young nationals who seek their posts; they are derivative and traditional, embodying, of course, someone else's traditions; they are primarily teaching institutions for the public service, medicine, law and engineering, and they rapidly create disillusionment. Students are disappointed by the incapacity of the national economy to absorb them at levels that fulfil their expectations; faculties feel they are insufficiently recognized; and governments which hoped for instant effects on growth and productivity grumble when, instead, they find that universities are endlessly expensive, centers of student disruption, and sometimes, in the early days, less efficient producers of skilled, high-level manpower than the elite secondary institutions they replace.

Stage III, Bowles suggests, arises out of the recognition of the rigidities of the systems of formal education created in Stages I and II. Something must be done about the drop-outs, or the forced-outs, from the formal system. Something must be done for the rural areas, because the schools serve the cities and towns almost exclusively. Attention turns to non-formal education, especially in rural communities: to the provision through short-term programs of literacy and simple skills in improving farm yields, in child care, and in family nutrition.

Stage III merges into Stage IV as the system of formal schooling begins to adapt itself from an elite education to a mass education role and to take on the functions provided by ad hoc programs in Stage III. The schools begin to learn from years of sad experience to retain students at least to the level of functional literacy, to adapt themselves to a wider range of social needs, and to fit a much higher proportion of the population for mass political participation. The strategies of Stage IV are automatic promotion, free passage to secondary school, open entrance for older students, use of media recognition of non-formal methodologies—the changeover of the system from a giant sieve to a network of learning centers.

Finally, at Stage V comes the adaptation of the university. It moves in two directions from its early role of training the few for a limited range of professions and for public life. First, it enlarges its role by expanding program ranges and by university extension work, reaching out to a broader constituency as the schools did in Stage IV. Secondly, it develops a research capacity adapted to national development goals and, through its own graduate programs, reduces its dependency on overseas institutions and foreign models.

I have belaboured Frank Bowles' development schema, giving you an oversimplification of an oversimplification, for two reasons: first, because it helps in sorting out thinking about how the international spread of the university takes place and gives insight into how interuniversity relations have developed up until the present; secondly, because it lends itself to speculation about where universities may, and perhaps should, go in the future. Let me say a word on the first point now and return to the second later.

If one tries to put together the moving picture of the university's evolution in the developed world with the pattern of its growth in developing countries, the images merge together in a clumsy minuet. European universities by the mid-20th Century were reaching the end of a complex cycle and preparing to dance a new figure when the developing countries' universities began a rapid recapitulation of the early steps, repeating most of the mistakes and adding some of their own, but subtly changing mood and movement. The European, and especially the British and French, universities had done little to modify their traditional role of grooming a governing elite by the time they were exported to colonies and former colonies. The main change they had made since the late 19th Century was to stress research, particularly in the sciences. In so doing, perhaps professors became as dedicated to reproducing themselves in their students as to producing practitioners of the liberal professions, administrators, and political leaders. The newer research emphasis was not immediately exportable to Third-World universities, but to the extent that it modified the university curriculum, it probably worsened the fit of university programs to the developing nations' needs. By the time domestic change and American example produced broadened, less elite-centered university patterns in Europe, the old mould had impressed itself deeply on the emerging institutions of the Third-World, and the process of rubbing down sharp contours stills goes on.

It is perhaps worth noting, because I want to return to the point later, that the influence of British and French universities on the Third World, and especially on Asian and African institutions, was greater than that of North American, or Russian, or more recently Chinese universities, not only because it came earlier but also because it was based on university-to-university links. Except in isolated cases like the Philippines and pre-revolutionary China, American university influence was channelled through government programs of aid. In the United States, as in Canada, university people found their way into the Third World as part of a technical assistance program, and with some notable exceptions, institutional involvement was much less intense. The other side of the flow—Third-World students moving to North American or Soviet universities for undergraduate and graduate studies—tended also to be less institutionally involving. I doubt whether, even now, Harvard, or even a specially created institution like Patrice Lumumba University in Moscow, can match the influence exerted on Third-World attitudes by Oxford or the Grandes Écoles of France, let alone Harold Laski's London School of Economics in the late 1930s and 1940s.

Very recently, the willingness of the British, Dutch, and West German governments to fund university-to-university contacts between their own institutions and those of the developing world seems to be weakening. I find this distressing, not because I believe these contacts have uniformly been useful and beneficial, but because the very fact of such linkages, with minimal government control, may become crucial to coping with looming world problems.

Universities and the New International Order

Let me turn now to some of the huge problems we are going to have to manage. Radical inequality cannot be perpetuated in a world of closer and closer interconnections when people have been *told* that things are going to change. The unequal status of remote peoples or groups, of whom one sees or hears little and who seem quite different, may be tolerable. When the wealth and ease of others are daily before one's eyes, inaccessible yet part of one's expectations, they become intolerable.

During the 1950s and 1960s, the expectation that underdevelopment could be turned into development, that conditions of life would steadily improve, was solidly implanted. International aid was to be instrumental. Strategically placed, such assistance would bring economies to the take-off point where growth could proceed on its own. Obviously, these expectations were false in all but a few instances. The gap between rich and poor countries widens, as does, in the poor countries, the gap between rich and poor people. We have begun to look at economic aid more closely and to see how pitiful it is in comparison to the economic forces that perpetuate inequality. Let me give just two examples.

1. The U.S., Britain, Japan, and the European Economic Community spend between $21 and $24 billion a year on direct and indirect support of their own primary commodities that could be imported from the Third World. They spend about $12 billion on net official development assistance.
2. By the time they are processed and retailed in the developed countries, the value of Third-World commodities is about $200 billion. Third-World countries receive for these commodities about $30 billion.

Figures are dull. The point is made as well in verse. These lines came from Arthur Hugh Clough, who lived in the 19th Century, when economic aid was personal, not national, but probably just as useful.

"I sit at my table, en grand seigneur,
"And when I have done, throw a crust to the poor;
"Not only the pleasure, one's self, of good living
"But also the pleasure of now and then giving.
"So pleasant it is to have money, heigh ho,
"So pleasant it is to have money."

It may become less pleasant before long; but that is not the point I wish to make.

A key characteristic of the international development philosophy of the 1950s and 1960s was that it made attaining a reasonable level of world well-being a goal that could be pursued through *national* policies. The developing countries needed an effective national plan; the developed countries did their share through bilateral aid policies or, to a lesser extent, through national contributions to multilateral aid and technical assistance agencies. The experience of a fluctuation in international commodity prices which throws a development plan into complete confusion and wipes out in a few months the effect of years of economic aid shakes profoundly one's faith in national policies. The realization that a new international framework is needed; that international institutions to cushion the effects of monetary fluctuations, stabilize commodity prices, and take the developed-world bias out of international trade are urgently required—these are the insights of the seventies. Only the wildest optimist believes such institutions will evolve very quickly. But all of us who retain some hope must ask whence they might arise. It becomes important, I suggest, to seek out institutions around which the ethics of internationalism might cluster, which are common to all countries, which are capable of creative imagination, which can rapidly share ideas and transmit critical judgments with concern and yet without great resentment.

To no one's surprise, I am thinking of universities. What are their chances of evolving, in the developed and underdeveloped countries alike, to a common Stage VI where they continue to serve national development goals but increasingly contribute to international development? What are their assets and liabilities as the hatching ground of a new internationalism?

First the assets. Universities share an approach to problems deeply rooted in reason. They have common standards for testing the quality of evidence and the logic of argument. In short, they communicate discipline by discipline, with reasonable ease. These statements are truer for the physical and biological sciences than for the social sciences, unfortunately, but even in the latter case, the situation is probably improving. Since their *raison d'être* is continual enquiry, universities are uncomfortable in the role of dispensing received doctrine. Even in states where governmental authority is exercised most directly, the university is seen as an unreliable instrument. Professors cannot do their jobs unless they have access to the literature of their disciplines, and the necessary presence in university libraries of unorthodox ideas is unsettling. To some extent, university autonomy must exist, and although it can be very severely restricted for long periods, the inherent tendency of the institution is to reassert its claim to freedom of enquiry and to reestablish intellectual contact with other universities. Perhaps it is also worth mentioning the obvious point that the style of university interrelationships is nonviolent and economically nonexploitative. Professors make reputations by being intellectually, not physically, overpowering; universities are usually not expected to make profits (the private universities of the Philippines, with shares listed on the stock market, are an extraordinary exception). Finally, universities work on a longish time-scale, as governments which contract for university research continually discover to their great irritation. The process of thinking through the problems of a new international order, though urgent, is probably best tackled by those who are not encumbered by the need to make day-to-day decisions.

On the negative side, it may be argued that universities, because of their historic role of producing privileged elites, are ill-adapted to contributing to the solution of problems that have their roots in inequality. As agencies for national development in the Third World, they are widely perceived as less effective than they should be because of their mandarin disdain for manual work and their remoteness from the facts of poverty. It is difficult to believe that professors and students are in close touch with rural despair when, for example, it costs thirty-five times the annual per capita income in Kenya to educate a student at the University of Nairobi. If however, as Bowles suggests, universities as they mature sharply reduce their elitist character and take on roles that relate more closely to broad national development, then at the same time they may be fitting themselves better to aid in international development and in the reduction of international inequalities.

Strategies

On balance, it seems plausible to claim that universities can make a strong contribution, perhaps a unique contribution, to the evolution of a new international order. But it probably will not happen automatically or without a conscious effort on the part of universities to assert their international, as well as national, character. (I am very conscious of speaking to you as a university president from a country in which the level of government responsible for international affairs has just opted out of direct financial support for universities, except in research, and from a province which was the first in Canada to impose differentially higher fees for foreign students.)

Let me conclude by sketching certain strategies which may enhance the universities' chances of playing a more constructive international role.

1. *Reinforcing international disciplinary networks.* These are well-developed in the natural sciences, much less so in the social sciences and humanities. Most discipline groups receive support from UNESCO, but not enough. No chance should be lost to urge on UNESCO the need to pay more attention to developing these networks and, particularly, to extending them effectively into the Third World, rather than allocating resources to its own already unwieldy bureaucracy.

2. *Creating and adapting interinstitutional links.* Here I would stress particularly the advantages to the purely internal health of the developed countries' universities of increasing the international mobility of professors and administrators. Most European and North American universities expanded enormously during the 1960s and took on a large contingent of young staff. Growth has now slowed or stopped. New appointments come rarely, and the need to replace those who are there will not come until far-off retirement dates are reached. The prospect of university staff growing old and stale together is unappetizing, but it will happen unless interinstitutional rotation is better organized.

Exchanges between developed-country universities and Third-World universities are as difficult as they are important. The nature of viable interrelationships varies with the stage in development through which the developing country's university is passing. New or young universities will require expatriate staffing simply to mount effective undergraduate teaching. Part of this need can be met by agreement for "secondments" with established First- or Second-World institutions, and this may be preferable to the direct hiring of individual expatriates. The flow of interrelationship between institutions in these circumstances will tend to be largely one way for an initial period, although it is vital that it should not be exclusively so. For this reason, such linkages fall easily into the inadequate category of technical assistance and contribute only slightly to the working out of new kinds of international relations. In many Third-World universities, however, Bowles' Stage V is being reached. Research capacity has been created and the possibilities of joint research projects with developed countries' universities are real. Inevitably and properly, such joint research will have to relate primarily to the national development needs of the developing country, but it is reasonable to expect that shared insights into these needs will contribute to an understanding of the requirements for a new international scheme of things.

Here a caveat must be entered. It is all too easy for an entrepreneurially inclined university in a developed country to maneuver a request for, or vague support for, joint research funding from a university in a developing country simply as a means of getting its own interests, and its own people, financed. It is precisely this kind of sham that has made the governments of some developed states shy away from supporting university-to-university projects. If our universities are to fulfil the constructive international role we have outlined, their new relations with Third-World universities must be based on reciprocity and partnership.

3. *Funding of international links.* This, amongst universities, especially those based on common research endeavors, must come largely from the developed countries, and pressure must be exerted not only on aid agencies to finance such ventures but also on national research-granting bodies.

If I have stressed the need for universities to develop policies that facilitate interinstitutional links, it is not only because I consider them important but also because of the audience I am addressing. All of you are deeply involved in analyzing the operations of your universities. Your influence on policy can be strong. I urge you to use it to encourage your institutions to play the vital role in international development of which they are capable.

INSTITUTIONAL RESEARCH 1977: PROGRESS AND PROMISE

James W. Firnberg
President, The Association for Institutional Research

Election to the presidency of a professional association incurs a few duties and responsibilities, a bit of privilege and honor, and a license to speak one's piece in the form of a presidential address. Wisdom dictates that the license be granted at the close of presidential tenure and not at its beginning. Ritual demands an evaluation of the progress the association and its members are making, and associational vanity requires an outlook for the future. Self-preservation suggests that it all should be done quickly and briefly.

Let's begin with two statements by well-known and friendly critics. Some few of you may recall Lewis B. Mayhew's keynote address to the 1966 Forum. His candid view raised some eyebrows and dropped into our laps a call for progress with his statement that: "Institutional research although now well regarded, becoming affluent, and well supplied with technical devices, has yet to make a major impact on the main course of thinking about higher education."

Five years later, Paul Dressel (1971) re-emphasized Mayhew's assessment and added his own challenge: "The Association for Institutional Research is neither large enough nor prestigious enough to give the institutional researcher any great professional stature by his activity in it."

The candor of these remarks may have alarmed some, but, nevertheless, they did focus the spotlight upon two compelling facts of life: (1) that those of us in the field can ill afford to rest on our laurels, and (2) that the excellence in institutional research already achieved must be combined with a determination for even greater accomplishments in the future. Has institutional research had an impact on the major course of thinking about higher education? And, can the Association for Institutional Research provide the professional status and leadership needed to do so? The answer in 1977 should be that both institutional research and the Association for Institutional Research are alive and well—and continuing to grow and mature. Neither is what it has been—and both are becoming what they should be.

With this forward in mind, let's take a sweeping look at institutional research—at where we have been and where we intend to go, at the progress of the past years and the promise of the future.

As institutional researchers, we may point with modest pride to several obvious successes. Perhaps the most significant of these is the collection and analysis of institutional data. We have achieved a degree of sophistication in the collection and analysis of data dealing with student enrollments, space utilization, faculty work loads, costs, and other information needed for planning and management. The recommendations of the Henle Report, issued by the National Science Foundation in 1967, are now, for the most part, a reality. There is little doubt that we have succeeded in developing Systems for Measuring and Reporting the Resources and Activities of Colleges and Universities.

Success in the collection and analysis of data points to success in the development of methodology for institutional management and administrative decision making. Here, some critics may believe that we have gone overboard and quantified too much without qualifying often enough. Critics may also be found who contend that we have been able to compile volumes of facts and figures but have not succeeded in using the information which the facts and figures contain.

The managerial revolution described by Rourke and Brooks (1966) has succeeded reasonably well without imposing upon academe the narrow technocrats that were first feared. Yes, we have used our "burglar's tools" and quantified almost every conceivable aspect of our organizations. However, the central thrust of the managerial revolution has involved an informational revolution in which we are now moving, from the mere collection and analysis of data to fair information practices and the full utilization of data and informational resources.

As Bernie Sheehan so aptly stated last year, in many instances these efforts "to know thyself" have enabled others to know us—and to know us perhaps too well. The mere fact that we have compiled and used facts and figures has invited their use not only by ourselves but by those outside our institutions. In he wake of our attempts at efficient management, these facts and figures frequently are used against us.

By and large, institutional researchers have been sensitive to the changing demands and expectations for our institutions of higher learning. A university's function and purpose changes as the desires and needs of society—and a sub-set of society, the students—for new and diversified curricula change. Decisions which effect these needs and desires must constantly be revised and re-evaluated in light of these changes. Student preferences or interests in certain fields of study are reflected in declining or increasing enrollment figures. In some cases, we have been able to anticipate changes in student preferences; in other cases, we have not. For example, at my institution we see an increased enrollment in the health-related professions. Ten years ago, this field was checked primarily by premed and predental students. In 1966, just over 10 percent of the freshmen students on our campus indicated an interest in health-related fields. In 1976, this figure had risen to over 20 percent. What were we able to forecast about this change? Were our projections sophisticated enough to know this in advance? Could we handle this particular transition efficiently and effectively? Were we able to adjust class sizes, course schedules, faculty assignments, facilities, and budgets to accommodate the demand?

The changing interests of students can change the entire nature of higher education. If we analyze the enrollment trends at many institutions, we find dramatic moves away from the traditional disciplines, the liberal arts, sciences, and humanities, but an increased interest in occupationally oriented curricula. Given such moves, what is the fate of the traditional disciplines? Will colleges of liberal arts survive the 1970s the 1980s? Are colleges to become institutions of higher training rather than institutions of higher education? Have we as institutional researchers even asked these questions?

The next decade will not be easy for institutional researchers, but it may well be the decade in which institutional research proves its mettle. The traditional college-age population of 18- to 24-year-olds is expected to decline in the 1980s, and how well institutional researchers can help institutions adjust may well prove their value in institutional planning and management.

The uncertainties of change are a persistent problem in institutional research. No longer can we rely on old methods and concepts of institutional adaptation. We need to formulate an awareness of change that is systematic, critical, and innovative. It is essential that we make broad, in-depth analyses with respect to institutional change and meet the requirements resulting from those analyses.

This shifting emphasis as well as stabilizing or declining enrollment should give cause for alarm since many of us are funded by enrollment-driven, number-conscious processes. More students mean more dollars; less students mean less dollars. If we continue to be funded in this manner, enrollment decreases will reduce our budgets more rapidly than we can reduce our costs. If budgetary pruning becomes a necessity, who is in a better position than we to study and recommend where, when, and how this pruning should take place? If we do not take steps twoard selective pruning, we should not be offended when across-the-board cuts or wholesale trimmings takes place. As early as 1971, Clark Kerr warned that: "Cost-effectiveness of operations will be more carefully examined. If this is not done internally, it will be done externally by the 'new experts' working for legislatures and governors."

The planning functions of the institutional researcher should receive special attention from both the profession and the Association for Institutional Research. Even institutional researchers have been reluctant in the past to accept the responsibilities of planning, they no longer can dissociate themselves from the planning function. Some may disagree with this viewpoint, but suggestions as to which course of action is to be followed should be made from the objective viewpoints of the institutional research officers who, because of the information they have gathered and analyzed, are probably the most knowledgeable people around on the subject. Institutional researchers should bridge the gap, through effective communication, between faculty and administration, between opposing administrative forces, always with the best interests of the institution in mind.

Along similar lines, institutional research must increase involvement with decisions made at the departmental level. The department chairperson is low on the hierarchical totem pole of a college's decision-making process, but it is at this level that "gut decisions" are made. Almost daily the department chairperson confronts problems relating to faculty size and qualification, faculty work load, facilities, and programs, and at this level the quality of an institution is determined.

The intitial step in any systematic process is crucial to success. Efficiency and quality at the departmental level are essential. We must gear our efforts, therefore, to helping to improve the quality of decisions at that level and to facilitate the larger decision-making process of the institution. We must remember that it is a relatively simple task to aggregate departmental data to the college or division level and from there to the institutional level. It is impossible, on the other hand, to go in the other direction.

While we are providing the department chairperson with information and reporting findings on this level, and in all aspects of institutional research, we need to become more aware of the importance of effective communication, which would include disseminating information among ourselves; a comprehensive system of reporting our findings; and a system to provide feedback for evaluation of our research. Interinstitutional data exchange (formal and informal) is another form of communication that is important. If it is useful to make comparisons within an institution—comparing, for example, sociology with history—wouldn't it be more beneficial to compare history in one institution with history in another similar institution?

The increasing role of institutional researchers in the formulation of policy and planning may include an involvement in politics to achieve desired goals and objectives. I realize that *politics* is a dirty word to many, but it is a realistic and logical offense. So many decisions relating to colleges and universities in the public sector—and even those in the private sector in the United States, Canada, South America and Europe—are political, that it is almost a necessity that institutional research officers play an active role in the political struggles that directly pertain to their institutions.

Another concern of the institutional researcher should be the need to minimize external influences affecting institutional autonomy. I see these external influences as one reason why we have not accomplished all for which we may have hoped.

Earlier this year, The Chronicle of Higher Education published a *10-Year Index*. Under the topic heading, Governance, there are scores of articles dealing with external influences on institutions. A brief listing of some of these follows:

Colorado regents clash on academic freedom, tenure, patriotism

Dean fired, dispute erupts in Texas

Judge rules that SUNY at Albany trustees must approve the way student fees are used

Grand jury to investigate Ohio U trustees

Vermont court backs trustee control of student activity fees

Maine governor asks for resignation of entire U of Maine board

Ohio governor aims to cut regent's power

West Virginia governor rescinds authority of board of regents

Governor Brown's effect in California.

At this point, we dare not slight federal bureaucracy. The burden of federal paper work has come under considerable scrutiny over the past year, and several national panels, committees, and task forces have been delving into the question. AIR has had considerable input into the issue, and it should be one of continuing concern.

As institutional researchers, we were beginning to bring technical knowledge to bear on internal problems and pressure when external pressures and influences became almost unbearable. A point of sophistication had been reached in the management of higher education that produced sufficient data and analysis for internal problem solving and decision making. Rather than confine this information to internal use, institutional researchers are called upon to facilitate its external use.

I recall when I went into institutional research thirteen years ago that our major function was external reporting. After some period of time, we were able to routinize this external reporting function and concentrate on the development of data systems to support internal decision making. We have almost come around a full 360 degrees. Just to give you one example, during the twelve months from October 1975 to September 1976, our office had the equivalent of one staff member working for agencies outside the university system. Most of the HEGIS Reports, EEO-6, salary reports, and so on are computerized, so the completion of a report is almost a matter of transferring data from a printout to a printed form. In some institutions, particularly the smaller ones where the availability of computers is not so great, I would venture to guess that at least one person is involved in external reporting. Extending this notion across the more than 3,000 institutions in North America, the costs would be staggering—particularly when you add in data processing time, other time outside the institutional research office, and time to develop data bases to support reporting. A cost/benefit analysis of the larger process could be interesting.

Now that we have discussed external aspects, we should also devote some attention to internal evaluation which is another challenge of institutional research. Everett Hopkins, speaking at our 4th Forum on The Role of Institutional Research in the Evaluation of Policy, asserted that "internal evaluation is not only a legitimate function of institutional research, but it is a necessary one." I believe it is one of the most essential functions of institutional research. The old proverb, "physician, heal thyself," is certainly applicable here. Inasmuch as we are able to set our own house in order, others will be able to follow our example.

The challenges facing institutional research in the future are formidable ones. It will take our patience, knowledge, and energy to meet these challenges. Our efforts must be channeled into (a) helping define the objectives of colleges and universities, (b) continuing to analyze the decision-making process, (c) taking a more active role in the creation of policy and institutional planning, (d) exploring the elements of change in institutional systems, (e) developing more effective means of communication, (f) minimizing external influences in higher education, and (g) maintaining involvement in internal evaluation.

We have come a long way since Mayhew and Dressel made their observations, but we still have a long way to go. The future of institutional research is dependent on all of our efforts to engage in new and innovative research that will make what Mayhew (1966) alluded to as "a major impact on the main course of thinking about higher education" (p. 1). If we have not made such an impact in the past, we should not be hesitant to strive for impact in the future. Institutional research has a short history, but some of us believe it has a promising future.

References

The Chronicle of Higher Education. *10-year index.* Washington, D.C.: Author, 1977.

Dressel, P.L. and Associates *Institutional research in the university: A handbook.* San Francisco: Jossey-Bass, 1971, p. 322.

Henle, R.J. *Systems for measuring and reporting the resources and activities of colleges and universities.* Washington, D.C.: National Science Foundation, 1967.

Hopkins, E.H. The role of institutional research in the evaluation of policy. A paper presented at the 4th Annual National Institutional Research Forum, The University of Minnesota, May 1964, p. 40.

Kerr, C. Address delivered at the 26th National Conference of the American Association for Higher Education. Chicago, 1971.

Mayhew, L.B. Imperatives for institutional research. A paper delivered at the 6th Annual Forum of the Association for Institutional Research, Boston, May 1966.

Rourke, F.E. & Brooks, G.D. *The managerial revolution in higher education.* Baltimore: The Johns Hopkins Press, 1966.

Sheehan, B.S. *To know thyself.* Presidential address to the 16th Annual Forum of the Association for Institutional Research. Los Angeles, May, 1976.

A CHIEF EXECUTIVE OFFICER'S VIEW OF INSTITUTIONAL RESEARCH

Stanley O. Ikenberry
The Pennsylvania State University

One needs to begin a discussion of the chief executive officer's view of institutional research with a statement of the overall purpose of institutional research in a college or university setting. In my view, the purpose of institutional research is to improve the quality of decision making at all levels within the institution, but especially at the central administrative level. In attempting to fulfill this purpose, institutional researchers are forced to cope with three major dangers: first, the temptation to conduct excellent studies on the wrong topics; second, the temptation to conduct inadequate studies on the right topics; and third, the threat that superior studies on the right topics will, in fact, never be used to improve the quality of decision making.

In order to cope with these three problems, the challenge facing the institutional researcher is also threefold. First, the institutional researcher must somehow work sufficiently closely with the chief executive officer and other key members of the central administration to be in a position to identify both the short- and longer range problems that face the institution and to identify the decisions that will need to be made with respect to these problems. The second challenge, of course, is to devise a research methodology sufficient to attack the problems in decision-relevant terms. Required here is the professional expertise of the institutional researcher. And finally, the institutional researcher shares the responsibility, along with the chief executive officer—the president or the chancellor—to get the results of institutional research into the mainstream of decision making.

The problems confronting institutions in the years ahead will undoubtedly vary from institution to institution. At the same time, there are four problem areas that are likely to be common to most colleges and universities. The first is that changing demographic figures, including a decline in the conventional college-age population, are likely to present most institutions with the problem of maintaining enrollment stability. Enrollment stability will be a manageable problem in the years immediately ahead, but during the latter part of the 1980s, it may be a problem of overriding concern for many institutions.

Secondly, related to the problem of enrollment stability will be the challenge of maintaining financial stability. Inflationary pressures have hit colleges and universities with special severity. These pressures are likely to continue. Faced with the prospect of stabilized or even declining enrollments, one of the major sources of income for many institutions, tuition revenue, is likely to become a less reliable source of financial support.

A third problem area that will be common to most institutions is the challenge of maintaining institutional vitality. I refer here to maintaining faculty vitality, a curriculum that is alive and up-to-date, and an attitude within the institution conducive to intellectual commitment and accomplishment. The prospect of stable or declining enrollments, along with financial stringencies, is not the climate in which most colleges and universities have nurtured institutional vitality during the last two decades. Quite to the contrary, institutional vitality has been nurtured in most colleges and universities in the context of growth and rapidly expanding resources. New patterns for maintaining institutional vitality in the absence of enrollment growth and with the reality of growing financial stringency will be needed.

Finally, a fourth area of concern likely to face most colleges and universities is that of maintaining collegial stability. Colleges and universities face their own pressures and problems. They are, however, also a part of the larger society, and the strains and stresses in our society spill over onto the campus. Energy, the economy, the availability of jobs—these and other societal issues are likely to place increasing strains on collegial stability, that is, the cohesiveness of the academic enterprise as we know it.

What do these four problem areas suggest for the role of the institutional researcher? More than ever before the institutional researcher must be a highly skilled individual with a clear sense of professionalism. He or she must be knowledgeable and accepted by many different members of the academic community, including the faculty, the student body, and the administration. In order to understand the needs of the chief executive officer and the central administration generally, it is essential that the institutional researcher be subject to the widest possible spectrum of contacts and understandings. It is this comprehensiveness and the related demand to relate to multiple constituencies that is characteristic of the role and responsibility of the president or chancellor. To be helpful in the decision-making process, the institutional researcher must not only appreciate the comprehensive perspective of the chief executive officer but must apply this comprehensive view to the study of institutional problems and in the testing of realistic options.

From the perspective of a college or university president, there may never have been a more difficult and demanding period in American higher education in which to provide creative academic leadership than in the decades immediately ahead. College and university presidents need your help. Excruciatingly difficult decisions will need to be made. Hopefully they will be made on the basis of the most enlightened and sophisticated analyses of problems and alternative solutions that we can make available to them.

As you look ahead to this challenge, I urge you to get to know the chief executive officer of your institution. Understand better than you do now the problems and pressures he or she faces. Work deliberately to win confidence and respect. And, of course, lend all the help and support you can. Clearly, it is needed. This will not only make your role within the institution more satisfying and productive, but, hopefully, will also lead to stronger and more responsive educational programs and institutions in the years ahead.

CENTRAL AUTHORITY VERSUS CAMPUS AUTONOMY: THE GREAT DEBATE

Emmett B. Fields
President, State University of New York at Albany
Robert B. Mautz
Regents Professor, The University of Florida
Ben Lawrence, Moderator
Director, National Center for Higher Education Management Systems

Mr. Lawrence:

There is almost universal agreement that institutional autonomy is a cornerstone concept for maintaining diversity and quality in American higher education. At the same time, we recognize that state governments are properly concerned with the efficiency and effectiveness of public institutions, and, indeed, states have a social obligation to encourage these virtues in private institutions. The issue is joined when state regulation, and sometimes outright control, over many aspects of higher education appears to encroach on institutional autonomy. State regulation or control is defended as a proper means for making sure that publicity supported educational programs are, in fact, responsive to societal needs. But this regulation and control often is seen at the institutions as an infringement on justified and needed autonomy—a threat to diversity and quality and to all the social needs that depend on them for fulfillment.

There are reasonable limits to institutional expectations for autonomy—and reasonable limits, as well, to state regulation and control. Within the context of that general recognition, some specific issues are currently being debated.

Regarding diversity, for example, one question is whether it must and should be left to autonomous institutional program decisions or whether there should be a centrally devised, statewide plan for diversity in higher education. How does one plan for diversity at the state level? Many institutions, looking to experience, are convinced that diversity is a by-product of institutional growth and that it is motivated in large part by the institution's own aspiration to improve quality. But when resources and demand will no longer support generalized growth in higher education, how can the state make sure that diversity is not being maintained at the expense of wasteful duplication?

Another specific issue is that of admissions standards. Has an institution receiving public funds the right to refuse to accept transfers of credit to meet its degree requirements or to refuse to grant credit on the basis of college-level examination performance? And of course, admissions requirement issues generate equity questions—questions about which society is becoming increasingly sensitive and politically aggressive.

Mr. Fields:

The theme of today's session points clearly to the new reality in public higher education, at least the new reality in the United States. We live amidst the product of our recent history, which has established a hierarchy of educational authorities in place of the simple ones of an earlier time. The chain stretches from the individual colleges and universities marked still by traditional views of self-governance, through the central offices of numerous university systems working out the means by which they will control their many campuses, beyond, perhaps, to state coordinating boards busily perfecting their mechanisms of authority at a higher level of aggregation, and even out to other state agencies which ostensibly have nothing to do with higher education but which have some degree of dominion over it. The details vary from state to state, but the general pattern is, indeed, the new reality. Hard financial times have fed its growth and now insure its perpetuation.

The polarities in which we university people often talk out our tensions, in this case the polarity of central authority versus campus autonomy, frequently betray by their very wording that none of us seriously believes in the extremes of the issue. In the western world, the images evoked by words like *central authority* at once run afoul of a rich litany of individualistic values that warn us to be wary of resting a case at that extreme. We are suspicious of organizations, even those called states, if the organizations are allowed to infringe the freedom of individual citizens to arrange their own affairs within the gentle confines of society's legislated or commonly held norms of social behavior. Similarly, we use terms like *campus autonomy* knowing full well that, if taken at our literal word, the attainment of autonomy would give us far more freedom than we seek. The extreme of campus autonomy could exist only in a condition of divorcement and disinterest between the university and its public, which would then no longer be a sustaining public. So truth and wisdom do not lie at that end, either. Good public policy lies between, in some appropriate balance of freedom and constraint—freedom which does no injury to the larger social order and constraint which draws back well short of totalitarianism. The rights of a campus should not be equated with the rights of the individual, of course, but this difference merely complicates the philosophical issue and does not change its nature.

So, I begin by rejecting the theoretical extremes. Even the most militant champion of campus self-governance must recognize that society cannot survive without mechanisms of control for the institutions it finances in the public interest, and even the most aggressive of centralizers must know that the people on the educational firing line are in the position to be most sensitive to the workings of the enterprise.

This is not to say that we have no important issue here, however. On the contrary, today's theme offers access to a grave set of problems. It is my belief that the emergent chain of overlapping authorities which now struggle to govern and direct our public colleges and universities in the United States is heavy with threat to the purpose and the proper working of the educational enterprise. The somber accent of our times is on the social control of institutions of learning and not on the liberation of learning itself. My sense of things is that we must somehow reverse the emphasis without losing sight of the necessity for social control.

How? I doubt that the riddle we face is, in any fundamental sense, a problem of theory. We will not find solutions in a perfected theory of the state, or in a more refined model of the accountable social organization, or in ever more intricate explications of the principles by which centralized and decentralized authorities might be caused to work harmoniously together. Our theories are good enough for now.

There is more progress to be made, I suspect, in taking a freshly analytical and behavioral look at the governance or central mechanisms themselves—the agencies which stand between the campuses and the ultimate executive and legislative authority of state government—with a view to discovering whether they are achieving the purposes for which they were created and with the additional view of identifying any educational debilities their rise may have caused. University systems are a sufficiently old phenomenon by now to have amassed a great wealth of data for the analysis of their behavior, and the same can be said for state coordinating boards and state departments of education. The literature delving into these sources to date tells a good many success stories, but there are tendencies in the picture that offer grounds for concern.

Bureaucracies that are formed to meet state purposes seem to have a way of developing their own internal dynamics without apparent relation to the philosophy of the state that forms them and with unexpected results. This is not a lament to the arrival of the 20th Century because I happen to believe that the instrument of bureaucracy is one of the most powerful inventions of modern civilization. It makes possible the efficient performance of massive labors, and abandoning it and its benefits would be unthinkable. We appear to be turning a corner in the American perception of government, however, and there are more critics of large-scale bureaucracy today than at any time in our history. Included among them are many liberals whose fathers were disposed, I suspect, to disparage advocacies of small government. Included, also, are many spokesmen for higher education who feel themselves to be drowning in a sea of governmental regulations. Similar anxieties arise from other sectors of public life, and the Carter administration is responding with efforts at some major reorganizations and simplifications of the federal establishment. Here is the grand symbol of change. We find ourselves speculating about how long the mood will last, what will come of it, and even whether it is possible to hope for change. We thus confirm a general recognition, pointed out long ago by Max Weber, that bureaucracies do respond to their own resistant and durable dynamics. For all we know, they may be beyond the control of anyone.

Let me identify quickly a few elements of the bureaucratic dynamic with which we must all have had some experience. Bureaus work with items which can be categorized by type, according to their common and objective features, and can thus be dealt with by routine processes which avoid the demands of dealing with every item *de novo*, as though it had no counterpart. Personnel officers categorize jobs according to the skills required and workers according to the skills they possess. The central offices of university systems categorize things called campuses and formulate general policies which apply to all equally, in accordance with their shared attributes. And so on. Inherent in the process is the possibility, perhaps even the virtual necessity, of ignoring whatever unique attributes a unit may possess in order to keep it contained within the category, because if it cannot be thus contained, it cannot be dealt with in routine ways.

Arguments inevitably ensue, of course—the spokesmen for the unit saying to higher authority, "You do not understand us," meaning that unique attributes are being ignored, and higher authority answering, "We do, too," meaning that they have gone as far as they can without blurring the requirements of the category. One conscientious way in which this kind of conflict is handled is to examine the characteristics being claimed as unique to see whether they are prevalent in several units of the category, if not in all, so that a subset can be recognized which will sustain a limited amendment to the general policy of the category. It works in a sufficient number of cases so that we observe in bureaucracies a tendency for policies, even if simple at the outset, to grow into elaborte regulatory codes.

It follows that the more complex the governance routines, the heavier are the manpower requirements of the system. This creates the threat of enlarging overhead costs, and it also establishes the ground for a professionalized staff whose careers consist in understanding the codes, managing their data needs, and advising policy officers as to what it all adds up to. Here, I think, is an example of the way in which the self-generating dynamic of bureaucracy can escape old notions of a theoretical nature. The old notion is that line officers in complex organizations are the ones who make the important decisions. But who working in bureaucracies is so naive as to think that we may stop there in our efforts to influence action without also influencing the sheltered staffs to whom line officers turn for guidance? Staffs—the technocrats, as John Kenneth Galbraith terms them, have long since become a new class of workers in the game of power.

I skip quickly over the tendency of bureaucracies to generate colossal flows of paper because it is too widely observed to need comment. When one combines dependency on categorical procedure with curbed attention to uniqueness, with elaborate codes of regulations, with professionalized staffs of code interpreters, with dependency on the written record, it can all become ponderously slow. This might be okay if the world could be slowed down to fit bureaucratic response time, but, alas, the world seems instead to have speeded up. So the frequent complaints of people on the operating line—we will say campus presidents in this case—are that they receive disapprovals that thwart acts they believe to be necessary to the enterprise and approvals that arrive too late to be of much use. At the extreme, there hovers over the bureaucratic scene a spector of entropy in which much energy is dissipated within the system: massive inputs of effort result in dilute outputs in the form of social benefits.

My own state of New York is, to use an Albany euphemism, a ***highly regulated*** state which manifests its share of these characteristics. The university, in appointing administrative and support people, must contend with a personnel system of seven grades of employees with salary boundaries for each grade. On top of this is an "impaction" rule that requires a new employee to be appointed at a below-average salary for the grade if the aggregate salaries for incumbents average at, or above, the stated average for the grade. Obtaining exceptions is a labyrinthine and unreliable adventure. We find ourselves coping with the internal regulations of no fewer than six state agencies in order to get the actions that are required for the ongoing work of the campus. In instances, the independently developed regulations of two or more agencies have interactive impact on each other that makes it virtually impossible for the university to spend its full appropriation. This would seem to mean that technocratic activity is thwarting legislative determination without anyone's intending it. (Of course, in the recent years of the fiscal crisis the Division of the Budget *has* intended it and has established expenditure ceilings and hiring freezes that have this effect.) We recently did a flow study on all of the campus-initiated actions requiring external authorization somewhere or other and found that the time required to obtain approval to fill a vacant position is, on the average, four weeks; to purchase major items requiring bids, 15 weeks; to purchase items not requiring bids, four weeks; to travel either in or outside the state, five weeks.

New York can also offer examples of another phenomenon which develops not from the dynamic of any single bureaucracy but from the rivalries between several of them as they contend for power in a time of scarce resources. A serious preoccupation just now on the campuses of the State University of New York (SUNY) is the heavy degree to which educational decision making in operational matters has migrated beyond the confines of SUNY into the domains of the State Education Department or the Division of the Budget. In one important arena, the State Education Department's program of review of doctoral programs, interagency rivalry has produced two years of stultifying controversy with no end in sight. The controversy has been reported periodically in the *Chronicle of Higher Education*, so I need not detail it except to say that the Board of Trustees of SUNY brought suit 15 months ago against the Commissioner of Education and his Regents in order to get a determination as to which of the two legal bodies should exercise the power of deregistering degree programs. The case is now proceeding on appeal, the determination of first instance having gone against SUNY. It is not necessary to know which side of the controversy is right in order to know that it is a controversy, that a lot more than the delivery of education is involved, and that a great deal of energy is going into it on both sides. Meanwhile, back on the campus, we work to improve all degree programs, including the doctoral programs in English and history that became data points in the great authority struggle.

I don't mean to belabor New York, because these characteristics can be duplicated in many states. Despite the complexities of a 64-campus system, SUNY works remarkably well; we find ourselves moving forward even in fiscal stringency, and there are many officers—in SUNY Central, in the Division of the Budget, and in other agencies—who understand the sometimes-mindless tendencies of bureaucracies and work effectively against them. But, there is no denying we are caught in a maze. Even Mark Twain would be sorely pressed to preserve his sense of humor.

What are the prospects for reformation of the educational bureaucracies at this stage of the nation's history? Without posing as a scholar of complex organizations, or even as a fully cognizant student of all that has been written about them, my sense of the literature is that it presents very few examples of bureaus which have turned themselves inside out and moved off in another direction, while reducing themselves in size or scope. Were it not for my normative view that this may be precisely what the times require of them, I suppose I would say that the behavioral studies are all against it.

It is worth observing, however, that the history of the rise of bureaucracies (of all sorts including those having to do with education) has been contained within a long-term period of geographic, demographic, and economic expansion in the West that has no parallel in previous periods of world history. The bicentennial celebration in America has reminded us that our first two centuries were occupied with pressing national boundaries westward and beyond, growing rapidly in population, and becoming a world economic power. Could it be that bureaucracies have been merely reflecting the expansive climate of the larger society in which they arose, that they have behaved in their apparent way because there was no compelling reason for them to do otherwise, and that scholars of bureaucratic behavior have been in no position to discern whether the fundamental forces at work were intrinsic or extrinsic to the organization?

We may be about to find out, because the third American century promises to be quite unlike the first two. Physical expansion for the United States is over, population growth has slowed, and economic growth is predicted to be gradual for the long future. We appear to be passing across a great historical discontinuity which has fallen to our generation of citizens to negotiate. We call it steady-state, and the slogan of the new age is ready at hand: Small is beautiful.

Let me offer the hypothesis—it could be no more at this point—that the growth pattern of educational bureaucracies is largely a result of extrinsic forces, that the agencies can adapt and even shrink in response to external constraints, that they can reform themselves in new directions, and that they can even turn back to the campuses and appreciate the inescapable fact that knowledge never expands by routine but only as novel clues are pursued to the discovery of new truths.

It is a new environment we face, and I am inclined to think that these huge old animals cannot survive in it.

Mr. Mautz:

Dr. Fields has produced an admirable statement. It properly points out that total independence of any individual, organization, or nation is a goal which is not attainable. The corollary is that some regulation and accommodation is essential. He thoughtfully points out that an historical period for the country and indeed western civilization has come to an end. Where we are going is unclear. It is clear that a national debate on goals, means of attaining those goals, and allocation of authority and responsibility in all areas of society is now underway.

I might aid in our thinking if I were [illegible] sketch for you my understanding of why centralization [illegible] education occurred. Everyone understands that [illegible] of automotive traffic requires control at the local and [illegible] level and that to assure that an interstate highway is [illegible] to nowhere, some coordination and even coercion, [illegible] required on the part of the federal government. Roads must meet, they must be able to withstand approximately the same load limit, etc. We all accept without question the necessity for strong federal intervention in the control of the manufacture and sale of food and drugs, and we readily concede the necessity for federal control of the environment in order to eliminate destructive competition between states. Many do not so readily concede the necessity for central regulation of educational efforts and "1202" is a fighting slogan for some. I preface my version of the development of central bodies by commenting that a wise man once remarked that changes for the better inevitably signify the loss of something good.

To state that state-supported universities have traditionally been autonomous is to exaggerate. History is replete with examples of something less than independence. But they were independent of a state governing or coordinating board and had more autonomy than they have today. In their external political relations, for example, they dealt directly with the legislatures. Presidents urged sympathetic legislators to adopt funding requests. The resulting appropriations determined policy, the location and the size of a building, the inauguration or expansion of academic programs, and the competitive relationship of each institution. The affairs of state government were relatively simple. Legislatures met infrequently, budgets were small, and decisions, although significant, were relatively easy to make. Alternatives were clear, and choices were few.

In the decade following World War II, the web became more complex. As the span of its concerns widened, the state assumed a larger role in the daily lives of its citizens. Increasingly, government regulated, subsidized, controlled, policed, and concerned itself with the welfare of its citizens. The government assumed responsibility for the aged, the indigent, the physically and mentally ill. Populations grew exponentially.

The clamor for free or low-cost quality education was extended downward to kindergarten and upward to the graduate school. Society increased its dependence on a technological base which demanded a high level of education and extensive research capabilities. Universities expanded and multiplied. Teacher colleges became universities. Graduate programs proliferated.

As state budgets became larger in response to new and more substantial demands, the old ways of determining the allocation of money were rendered outmoded and inadequate. State legislatures sought improved ways of conceptualizing and addressing the controversial questions with which they were confronted. They sought to deal broadly with the questions of allocation of additional support among categories such as mental health, roads, and education. Within the latter category, the proper balance among funding of kindergarten, education for the handicapped, and graduate and research programs became the focus of decisions. No longer could the legislature deal with the welter of conflicting data and frequently inconsistent claims presented by a larger number of individual and ambitious universities. The division of money among universities became buried in larger questions. Political rather than educational considerations governed hasty and often uninformed decisions with respect to the division of money among the plethora of university petitioners. Planning to accommodate the future was uncoordinated, parochial, or nonexistent. Yet the problem of expansion was the greatest single problem facing higher education.

The states responded by designating to a single agency responsibility for the planning and coordination of higher education. The legislature was thereby able to deal with the broader conceptual questions of the division of resources between public education and higher education and proper allocation of state revenue to each of these functions. Boards were given authority to recommend the establishment of new institutions and the expansion of existing ones and to plan for the distribution of students and programs among the institutions. The outcome of the struggle between those who feared encroachment by such boards upon traditional institutional autonomy and those who believed in the necessity for such unification was state boards with varied duties and responsibilities. Such boards range from coordinating bodies possessing recommending authority only to single governing boards controlling a consolidated budget for all publicly supported universities. Since mid 1950, however, the trend has been clear and unmistakable: states without such central authorities established them, and those with central boards strengthened their powers. At the present time, 47 states have central boards as contrasted with 17 in 1954.

Clark Kerr, in a foreword to the Carnegie Commission report on governance, listed the advantages of the central office as follows:

1. It concentrates certain external relations, particularly with state and federal authorities, in a single office where they can usually be better performed.

2. It facilitates long-range and overall planning of the creation of new places for students, of the provision of new services to new areas of the state, of the assignment of new endeavors among campuses, and of the continuing differentiation of functions between and among campuses.

3. It makes possible (although by no means certain) the determination of diversity among campuses, as compared with the standardization that results from their competitive limitation of each other in the absence of central policy. Diversity is more likely to flow from central authority than from local autonomy.

4. It facilitates greatly the creation of new campuses, and some of the most innovative have come from within multicampus systems.

5. It encourages better management, with the aid of specialists in the central administration and the exchange of experiences among campuses.

The disadvantages of such offices have been pointed out by Dr. Fields. They result in slower decisions; the process of decision making is more cumbersome; and they are frequently out of touch with the campus and the current practicalities of relationships. The process of centralized planning has inherent in it the frustrations of the aspirations and hopes of some. That is to say, to permit a law college to be established in one university is to deny a law college to X other universities. Centralized offices encourage the production of paper, and their rules and regulations—which are designed to cover averages—stultify the extremes which normally represent experimentation and creativity. Perhaps one advantage is that they shift the ire of faculty from the local administration. Indeed, a wise central administrator discusses with local presidents whether responsibility for an unpopular decision should be assumed by the local or the central administrator.

Dr. Fields noted that many of the problems of centralization stem not so much from the centralization of higher education as from the increasing centralization of government. Rules regarding classification and payment of personnel, rules regarding the siting of buildings and roads, rules regarding the disposition of revenue, rules regarding the purchase of equipment, rules regarding the employment of minorities, rules regarding the equalization of women's salaries—all of these stem not from the state higher education authority but from other state or federal agencies. If my own experience is typical, such rules are frequently made by other state agencies over the vigorous objection of the higher education agency. These state and federal agencies, in turn, represent society's response to the growing interdependence and the complexities of our lives. When population density was much less, it made little difference how you disposed of your refuse. When universities were relatively small, with few employees, and the state itself was not a major employer, personnel policies could be handled on a departmental or college level. The impact of a decision was minor. Now the state payroll is such that uniform policies with respect to pay are essential, as they are in any large organization, public or private. Finally, we have come to use government as a mechanism for achieving social goals. A determination of whether those goals are being realized and whether the various beneficiaries of state and federal providence adhere to public policies demands an overabundance of reports.

In summary, the cry against centralization is in part a protest against the restrictions required to enable man to live with man on this increasingly densely populated globe, in part a protest against the restrictions upon our freedom involved in achieving the social goals which the interdependence and humanity of man and the welfare of a democracy render essential, and in part a protest against the restrictions which accompany the allocation of limited resources. We do not easily concede that "big daddy" knows best.

I mean by this to place in perspective the outcry against controls imposed by a central higher education authority. Who among us has not witnessed that all-too-human tendency to rebel against any authority? Rebellions on a university campus sometimes manifest themselves in the attempts by professional schools, such as law and engineering, to free themselves from the controls of the university. The "we are different" cry can be used not only by the president of the university against a higher authority but by segments of the university against the authority of the university itself. And who is to say that the rules imposed by a university bureaucracy which controls a campus of 30,000 students (a sizeable city not too many decades ago) are any more responsive to the individual needs of faculty or departments than the rules imposed by a central body responsible for 20 universities and 250,000 students? Is one more remote than another? In our cries for independence, are we not harkening back to a longing for days that were and that cannot be recaptured?

To place a trend in perspective is not to endorse all the details and excesses. The excess of centralized management may stifle the creativity which is the ultimate achievement of higher education. When I was in Russia several years ago, I received an impression of enormous expenditure of human energy and time just to enable the system to work. So much energy was consumed by the operation of the system that little remained for accomplishing productive tasks.

A faculty consists of individuals who are professionals. They insist, and properly so from their viewpoint, on having a major role in decision making which affects their professional activities. Many of them are surprised, and often annoyed, to find that they operate within a large administrative structure which must establish rules in order to function. They are in a sense entrepreneurs with a close personal relationship with the students. Hence, it is not surprising to find impatience with restraints necessary to operate a large institution and an abiding sense of distrust of those who would interfere in any way with the free flow of events. The governance structure, whether at the university or central state office, must take into account the atomistic nature of universities and the true seat of authority. It is interesting that the faculty reaction to increasing centralization has been to seek relief by organizing through unionization. The collective nature of the resulting organization is contradictory to the atomistic nature of faculty decision making. The goal is to pit one large organization, the union, against whatever large organization thwarts the union's goals. The resulting concentration of power pits the tips of serveral large pyramids against each other and may well result in escalating the centralization, the diminution of which may have prompted the union's being.

My conclusion is that the balance of forces point to continuing, and perhaps even more, centralization. We tend more and more to look to the government as the guarantor, or at least the preserver of the good life. The humanists, for example, recently suggested the government had an obligation to provide appropriate jobs for Ph.D.s in humanities. I did not hear much scoffing at this idea in this, the 201st year of our country. But to think that the government would not then regulate salaries, dictate tasks, and finally regulate the supply is—well, the kindest word I can use is "naive."

Centralization will probably continue and even grow. Do we accept this and retreat, grumbling, to our enclaves? Not at all. Vigorous debates should center about goals and the most effective way to achieve those goals. For example, only a central agency can assure that a rational plan exists for extending educational opportunities over a wide geographical area with maximum access. On the other hand, although only the central agencies can assure that enough, but not too many, engineering programs are offered in a certain area, such an agency cannot and should not concern itself with the details of such engineering programs. While the central agency can and should make decisions with respect to the allocation of resources, it should not control the utilization of those resources within the university until the university attempts to thwart a prohibition by offering a forbidden program. I agree with Dr. Fields that there is no debate over the extremes. There is and must be a continued and lively debate over the range between those extremes. Reasonable men can differ on specifics, but no reasonable man can differ on the axiom that no inherent virtue exists in adherence to a philosophy that, on any given specific issue, centralization is automatically good or automatically evil.

THE IMPACT OF PLANNING SYSTEMS ON MANAGING AND STAFFING AN INSTITUTIONAL RESEARCH OFFICE

Marilyn K. Brown
John L. Yeager
University of Pittsburgh

Institutional research (IR) offices always have played a role in planning through the conduct of traditional functions such as projecting enrollments, counting students, faculty and staff, and studying attrition. The results of these efforts have provided the basis, either directly or indirectly, for planning conducted in higher education institutions. Within the last ten years, as the National Center for Higher Education Management Systems (NCHEMS) has made itself known throughout the country and *accountability* has become the favorite word of state boards, IR offices have become increasingly involved in planning activities. Most such offices have accepted these new responsibilities as part of their regular work load, utilizing whatever human resources are available.

During the next decade, however, if planning is to play a major role in higher education institutions, institutional research offices must be stafffed with the appropriate level of expertise to support this effort. Therefore, managers of those offices must take a hard look at the demands these future conditions will impose and plan accordingly. How will an expanded role in planning affect institutional research operations? What functions will IR offices be expected to perform? What will it mean in terms of personnel requirements and priorities? What organizational structure will best serve institutional research needs? The following is one perspective on the issues which are likely to confront managers of institutional research offices.

Role and Functions

Conceptually, institutional research offices will be expected to perform four major functions: (1) data exchange, (2) accountability reporting, (3) analytical studies, and (4) planning.

Data exchange. This function includes collecting data and reporting it to various external agencies including federal and state governments, professional associations, and directories. The data are not intended for purposes of assessing the performance of a given institution, but rather as more generalized descriptive information about the institution. While this has been a traditional function of IR offices, the trend over the last five years indicates that there will be a substantial increase in both the amount and detail of data requested. Institutions will have no choice but to severely limit reporting they are not compelled to do, and hard decisions will have to be made concerning which of the so-called non-compulsory requests will continue to be answered. As costs and demands escalate, it will become necessary to carefully curtail the amount of resources expended to support this function.

Accountability reporting. This traditional institutional research function has expanded rapidly over the last few years. As resources have become more limited, federal and state legislative bodies have increased their demands for far greater amounts of detailed data concerning the performance of individual institutions. While, traditionally, institutions receiving public funds have provided information to their various sponsors, in recent years there has been an exponential increase in the amount and type of data required. At the state level, many institutions which typically provided input-output types of data such as aggregate costs, numbers of faculty, support staff, students enrolled, and graduates, are now being asked to provide detailed information on class size, faculty work load, programmatic costing, and affirmative action practices. While some individuals, particularly those representing sponsoring agencies, will take the position that these new requests for data represent a higher level of sophistication, from the institutional research vantage point it would appear that these requests involve primarily an increase in the array of ratio data being produced that are almost impossible to interpret in any meaningful way. While NCHEMS has made some progress in standardizing definitions, many agencies and institutions are still struggling to produce requested data that can be understood and intelligently used. For example, in Pennsylvania, the four commonwealth universities, after a year of work, have not yet agreed on a common methodology for determining instructional level; therefore, two different methods are used, with the state accepting the cost data as though they are comparable. Though accountability reporting is fraught with problems, only the initial phase of such demands is currently being experienced. To a large extent, these current activities can be defined as the number manipulation activities which, given sufficient time, can be performed. The future information gathering will not involve efficiency measuring of institutional operation, but will examine effectiveness of the institution, a quality much more difficult, if not impossible, to measure. As competition for public funds becomes more intense, all institutions of higher education will be confronted with an increased number of requests to prove that institutional performance is equal to the investment.

Analytical studies. University administrators have traditionally looked to institutional research offices to provide specialized studies to support management decision-making functions. In the future, there will be an increased need to provide appropriate information to institutional management in those areas directly associated with resource allocation. While IR offices still will be asked to conduct studies in such areas as grade-inflation, this type of study will, of necessity, assume a lower priority. Much more critical to the institution will be information to support management decision making in the area of resource allocation. For example, it will increasingly become the function of the IR office to examine proposals to initiate or terminate programs. These examinations will take into account student demand, impact of programs on other departments or schools, faculty requirements, cost effectiveness in terms of both implementation and operation, and physical facilities requirements. Performing analytical studies will require the use of modeling techniques to ascertain the impact of selected actions over time and the effects of various policy alternatives that are available to institutional managers.

Planning. Planning support activities comprise the final function that institutional research offices will be expected to perform in the future. Whether or not the institution has a formally designed planning office, institutional research will play an integral role in support of planning activities. In both operational and developmental planning, i.e., the one-year and five-year planning modes, institutional research will continue to be responsible for providing analytical studies, enrollment projections, and a quantitative reporting structure for internal decision making, as well as managing central data banks to support evaluation activities. The major challenge facing an office of institutional research will be its involvement in long-rang or strategic planning. Institutions will, of necessity, have to make forecasts not in terms of a two-, three-, or five-year time frame, but in terms of a fifteen- to twenty-year time frame. The IR offices will be asked to assess potential markets, identify new methods of delivering services to these markets, examine the demand and supply of students in terms of occupations and manpower requirements, and assess the impact of these programs on the institution on a long-term basis. In addition, IR offices will be expected to predict funding patterns and estimate future income. Of particular importance will be the ability of institutional research to assist management in interpreting data obtained through various forecasting methodologies such as morphological scenario, force analysis, contexual mapping, simulation, matrix, delphi, and others.

A major distinction between the activities involved in strategic planning as opposed to activities currently or traditionally being conducted by institutional research offices is the nature of the data that will be utilized. A shift in attention from quantitative data to qualitative data involving societal values, expectations, and needs is required. Most importantly, the traditional analytical skills now must be combined with synthesis skills; that is, the ability to bring together diverse sources of quantitative and qualitative information, bringing new meaning and interpretation to highly uncertain data while always recognizing the risk associated with decision making. It will be the primary function of institutional research to provide the expertise to reduce to whatever extent possible the entropy associated with policy decisions. It is the unique speculative characteristics of the data, and the need to synthesize, that will produce the greatest challenge in the coming years to IR offices.

Personnel Requirements

On the assumption that the above four functions will represent the generic activities to be conducted by an office of institutional research in the future, it is essential that careful consideration be given to the personnel who are selected to perform these functions. During the next five to ten years, it is hypothesized that IR offices will have access to a larger array of data bases containing reliable and valid data that can be manipulated to provide base line data concerning institutional operations. As this occurs, there will be a concomitant shift in staffing patterns. Individuals who are currently performing clerical-type activities will be replaced by information specialists who can relate data needs to the people who operate the computer system and then synthesize the data to provide information required by administrators. Although many IR offices are currently staffed by individuals who are trained in economics, demography, statistics, computer programming, and systems management, it is evident that if institutions are to move into such areas as marketing and strategic planning there will be an increased premium on these skills, additionally requiring the ability to apply these skills to the areas of higher education. Mini-modeling activities will become increasingly important and there will be increasing dependence on interactive computer systems.

While technical skills will continue to be of importance, the higher level of necessary cognitive abilities will bring about major changes in personnel type. Individuals of high initiative who possess the ability to analyze problem situations and to formulate and recommend policies that can improve institutional operations will be required. It is important to recognize that by engaging in the four functional areas, IR offices will be in a unique position to have an institution-wide perspective that is unavailable to any other area of the organization. It is essential, therefore, that as a staff office to university administrators institutional research offices fulfill this role by continually responding to targets of opportunity, recommending changes that have institution-wide consequences, and not waiting until an assignment is given or until somebody asks for a specific piece of datum.

Directors of IR offices will be required to have a much broader perspective in terms of institutional environment. They will have to be not only aware of, but able to understand and be in agreement with, the value systems of the academic mission and the character of the institution, at the same time maintaining a high level of objectivity. In the final analysis, the success of each IR office will be determined by the degree to which it is able to support and interact with the various life-styles, values, and beliefs of the faculty who are performing the primary missions of the institution. Without this understanding, IR offices will be viewed with increasing suspicion, particularly in the areas of policy formulation and strategic planning, and their usefulness as supporting staff to the management team of the institutions will be greatly reduced, if not completely abrogated.

Staff members will be needed who possess a high level of professional activity coupled with an awareness of both the internal and external environment. A major issue facing directors of institutional research offices is how to obtain this type of staff. Do they simply dismiss existing people who don't currently have the required skills and competitively seek on a regional or national basis the best people available? What are their options? Although directors should seek to fill new positions or make replacements with individuals who do possess higher levels of skills than are currently available, they now must develop systematic in-house training programs providing job expansion opportunities, external professional training, and formalized course work offered by their own institutions. Too often, the development of current staff is less than systematically addressed. Directors ease their consciences by sending their staffs to such places as the NCHEMS workshops and other conferences. This hit-or-miss approach does not meet the needs. The Association for Institutional Research (AIR) should not only expand its workshops to include topics suitable for the more sophisticated staff and offer them more frequently than once a year, but it should also develop a more professionally oriented, integrated sequence of learning experiences to provide for the development of its membership. The AIR could draw on the expertise of its membership and experts at institutions across the country to assist in this task. This could be of invaluable service to the membership of AIR and to the institutions to which the members belong.

Finally, in terms of personnel utilization, as staff expertise increases there will be a concomitant increase in staff costs. Since relatively few institutions will be in a postion to employ the total array of talent necessary to meet the requirements that are envisioned by the four areas of operation, alternatives must be sought that can provide resource expertise as requirements demand. There are at least three options available that can be cost effective.

The first of these is the utilization of in-house consultants. That is, the utilization of existing faculty within each institution who have the particular expertise required. For example, most mathematics departments have faculty who have expertise in the area of statistical analysis; computer science departments can provide assistance in the structuring of data bases and information retrieval systems; and many faculty in the social sciences have extensive experience in the design of survey instruments and the collection and analysis of that type of data. Available at most institutions are demographers and economists, as well as operations research and higher education specialists who can provide on a short-term basis a high level of expertise. Although some IR offices currently utilize these services, it is likely that these internal types of arrangements will expand during the coming years.

Second, and perhaps to a more limited extent, IR offices may find it more cost effective to employ outside consultants for particular types of services, both in consultative advisory roles and in actual subcontract arrangements. This option would provide expertise with no continual commitment of funds.

Finally, an alternative that may merit some degree of attention is the establishment of informal information exchange mechanisms by AIR. Often, a great deal of time and effort is spent in reinventing the wheel simply because there is no ready access to colleagues who are working in similar areas. It might be possible to develop some special interest groups within AIR that could serve as a resource for the exchange of information in specialized areas.

Organization and Management of IR Activities

As offices of institutional research become more heavilty involved in the support of management decision making either through the function of analytical studies or planning, it will become important for these offices to report at a high level within the organization, preferably to the chief executive officer. This will permit more direct lines of communication in the staff support services that the office is to provide the institution, as well as facilitate the office's work in gaining coordination and cooperation with all areas within the institution. As resource management gains increased attention by chief administrators, appropriate linkages and relationships will have to be developed with other offices such as budget and computer services, as well as with the chief academic offices of the institution.

Of major importance to the director of an IR office will be the internal organization and management of the office itself. Again, assuming that the four major functions previously discussed are valid, and also assuming that personnel will be available who can be characterized as innovative experts in their fields, it will be necessary to organize both the activities and the personnel in such a manner as to maximize the productivity and performance of the office and at the same time provide a work environment that is supportive of the individual staff personnel and promotes their professional growth.

While recognizing that there is no single answer as to how an institutional research office should be organized and managed, there are several issues that need to be addressed in considering the IR office of the future. For example, all four functions to some extent share common data bases, yet each has unique requirements that differ from function to function. To provide common data, should a data manager position be established that is responsible for retrieving data from computerized systems to meet these common needs, or should personnel be organized around the four functions, each having its own information retrieval personnel? If personnel are organized around functional areas, will there be a redundancy and underutilization of expertise, or will a maldistribution of expertise exist? Can a functional organizational structure provide for opportunities and job expansion that will permit individuals to achieve some degree of professional upward mobility? How can one handle special projects that cut across all four functional areas? How does an office maintain a working knowledge of what's going on in the several divisions and schools within the institution and, at the same time, keep abreast of new changes taking place nationally in specific areas of professional expertise? While there is no existing prescription for the resolution of these problems, the possible benefits that could be derived from the implementation of a modified matrix organizational structure or team approach should be considered. This type of structure may not be appropriate for small groups of fewer than ten to twelve individuals, but it does have advantages in terms of creating an appropriate work environment for larger groups. One might conceptualize having individual staff assigned to various cells in a matrix with the horizontal dimension being functional areas and the vertical dimension being based on specific skills such as information retrieval, analysis or statistics, data collection, report preparation, and so on. An alternative might be to have the vertical dimension representing broad areas within the institution, thereby facilitating the working knowledge of these areas. Although there would be difficulties in managing such a structure, one benefit that might be derived is that individuals would have more than a singular responsibility, therefore permitting some degree of flexibility in assignment as well as professional development.

Issues

While specific solutions to issues concerning the operating functions of the Office of Institutional Research of the future cannot be offered, some of the major issues that each IR director will likely have to address are summarized below:

1. With the increase in requests for data, both for data exchange and for accountability, how can IR offices more effectively respond to these requests and what criteria should be established for determining the degree to which they should respond to these requests? How can the efficiency of their responses be maximized, thereby minimizing the number of responses?

2. Assuming that IR offices will require increased staff expertise, how can additional training and experience be provided to existing staff which will facilitate their professional development? What should be the role of AIR in these activities?

3. To what extent is it possible to supplement the capabilities of IR offices through the use of both internal and external consultants? How should these arrangements be made, and can they be afforded?

4. What alternatives exist for organizing and structuring IR offices in such a manner as to provide a working environment that is conducive to maximizing the individual potential and expertise of the staff?

While recognizing that there will be many factors that must be considered based upon individual circumstances, the greatest challenge facing the director of an institutional research office will be to identify the right combination of expertise and personalities and to mold them into an effective force for contributing in an innovative way to the solution of college and university problems, both present and future. If these challenges are to be met successfully, innovative management strategies that will facilitate the management of institutional research offices will have to be developed.

THE INSTITUTIONAL RESEARCH OFFICE: REPORT FACTORY OR INFORMATION CLEARINGHOUSE

Charles H. Bryson
Georgia State University

The Report Quandary

As an institution of higher education grows in number of programs and affiliations, there is also an increasing number of national, state, and regional agencies and organizations expressing interest in knowing about the operation of the institution. While many of these interests relate to program evaluation by professional discipline groups, others are of a comparative nature. In many cases, the information furnished is ultimately published in widely circulated documents, often becoming the basis for peer comparisons and professional evaluations.

With the increasing number of respondents providing information to outside users, there also exists an increasing potential for embarassment when reports leave the institution reflecting facts that are grossly different. While some queries regarding faculty distribution, salaries, and credentials are addressed to the chief academic officer, others are addressed to the finance officer, the institutional research officer, or the librarian. It is not an easy matter to determine what offices throughout the institution receive queries and how these offices, in their own ways, respond to them. An institutional research office frequently hears about surveys and questionnaires when a secretary from another office telephones to search for needed information or to ask how particular questions should be answered in situations where available data is defined differently from that requested. It is likely that many items that leave the institution purporting to be official data come from attempts to gather piecemeal facts using unofficial definitions or look-good interpretations. It stands to reason that the validity of the institution's official records will soon be doubted as more and more inconsistent, and sometimes contradictory, data are distributed in this decentralized manner.

Although an office of institutional research frequently has no explicit authority to create or maintain any of the official data files of the institution, the performance of institutional research increasingly puts this kind of office in a position to be held accountable for such files as well as to become increasingly enmeshed in an interpretive role. Probably much more frequently than one realizes, this kind of office receives requests to provide a variety of information to users both inside and outside the institution. While these requests may be in the form of memos, letters, or questionnaires, they are most often received informally by telephone or a walk-in visit. Requests are received from all levels of personnel ranging from the ambitious, inquisitive student searching for class project data, through secretaries, administrative assistants, senior administrative officers, and the institutional president. Apparently, the institutional research office is seen by its numerous customers, particularly high echelon administrators, as a place where information and procedures appropriate to interpreting the institution's information are available on a moment's notice. Consequently, there is ample reason for an institutional research staff to become uneasy when asked to report and interpret data using numerous informal sources where definitions can be established only through trial and error.

The Clearinghouse Function

Without appropriate recognition and administrative charge, an institutional research office often functions to a great extent as a quasi-official clearinghouse for large amounts of quantitative information leaving the institution. Having recognized and assumed this clearinghouse role, the institutional research office has placed itself in the position where others, both originators and recipients of the data, are prone to see it as responsible and accountable for materials passing through its hands. To some degree, this function has put the institutional research office in a position to work closely with other offices, where data are generated and maintained, in efforts to establish consistent definitions and usage of basic information.

A case in point is the data relative to staff personnel usually collected and maintained in the institution's personnel office. At Georgia State University, efforts have been made between the personnel office and the institutional research office to develop consistent and accurate data about staff and faculty personnel. This joint effort has been quite productive, and today, a variety of regular uses can be made of information residing on the personnel office data files. This cooperative effort toward standardizing definitions and usage has produced a substantial payoff in the area of institutional studies about staff and faculty personnel. It is unfortunate that information on faculty is not so readily standardized as that on staff personnel. Consequently, when inconsistent definitions of information pertaining to personnel holding faculty rank exist, data cannot be utilized to the desired extent.

It is in an instance like this, where inconsistent definitions and erroneous use of data are apt to cause frequent and gross distortions, that the clearinghouse role acquires greater dimensions. It then becomes necessary for the institutional research office to deal with data in ways inconsistent with basic concepts of good management and often demanding that subjective decisions be made without benefit of all the facts. Again, it must be emphasized that an office of institutional research, although frequently thought of as an information storehouse, remains in actuality an information clearinghouse.

While the institutional research office is not usually responsible for the generation or maintenance of any official institutional data base, it regularly needs to use information from data files of various types (e.g., the personnel file, student records file, budget file, curriculum file, and payroll file). Because of its familiarity with the interdependent relationships in the data, the institutional research office can spot occasional problems in the data and can work with appropriate administrative areas in a quasi role toward preventing release or publication of inaccurate information. In these cases, the additional function of content monitoring is sometimes coupled with content correction in the clearinghouse context. Although the institutional research office in my institution has gained, through experience, the knowledge to permit minimum monitoring of data for accuracy, it is impractical to expect this office to take on the task, voluntarily or otherwise, of originating, maintaining, or correcting any official institutional files. Yet, out of courtesy, my office has made a practice of informing areas responsible for the maintenance of data when obvious errors are observed. Generally these gestures have been positively received and encouraged.

Data Definitions

There are other vital areas related to these problems where an institutional research office can meet the challenge. A significant lack within the numerous record-keeping endeavors of most academic institutions is an institution-wide standard for data definition and utilization. The purposes of such a function are many. For example, when salary is mentioned, any number of meanings can be assumed depending upon the circumstances and interests. If a teaching faculty member's salary is in question, there are numerous options: Is it for the academic year? Is it for the fiscal year? Does it include supplemental remuneration? Does it include summer school remuneration? Does it include funds from grants? Does it include fringe benefits? Is the amount expressed as an hourly wage, a monthly salary, a quarterly salary, a per course salary, an academic year equivalent, or as an annual equivalent? These are representative of the type of questions that must be asked and answered about every item of data utilized in compiling information. With an operational data definition and utilization procedure, an item like salary would be consistently defined and utilized throughout the various areas where it is stored and used. Frequently, salary data is stored differently in various locations because one user needs total remuneration, another needs annual state monies alone, while still another needs equivalent academic year based only upon state funds. This ever-present increasing "hodgepodge" creates the very environment where nobody knows what anybody is doing and errors are born, nurtured and multiplied. In this context, eventual misrepresentation is a virtual certainty. Comparisons of disparate data coming from two different sources will obviously arouse suspicion as to the validity of any of the data or the honesty of the data reporter.

Data Base Manager

Several years ago, computer systems managers in many corporate structures perceived a collision course existing where major management decisions were being formed on the basis of inconsistently defined information. The need to monitor basic data definitions and specifications became even more acute as corporations began to recognize the interdependence of many of the departmental data bases previously thought to be the private domain of each individual operating component of the corporation. From the observation that all these separate little empires were related at some level grew the concept of linking the previously disjointed data to provide more timely and comprehensive management decision information. The management information system concept can thus be regarded as a practical attempt to incorporate general systems theory into the process of handling large amounts of detailed information so that it is meaningful when summarized for critical upper level management decisions. The function of the data base manager developed out of the need for data file elements to be adequately defined and documented at the time of systems design and implementation. This function, while not responsible for the accuracy of the individual bits and pieces of information, does have a continuing responsibility to monitor the mechanics and procedures of information storage and utilization. Otherwise, the type of data stored in a given field at any one point in time may differ greatly from that stored at another time, with the ultimate user never having any knowledge of the change in practice. The function of a data base manager is all the more important in situations in which data users have little or no input into the structure of the data and its initial gathering and storage.

It would seem appropriate that stronger support be afforded the function of data base manager in educational institutions. In some institutions, where there is recognition that all the official files of the university are related and interdependent, this function is in the hands of an institution-wide committee, with the chief executive officer or similar high echelon administrator as chairperson. Before new data files are added, their use must be adequately defined and justified. And, before definitions and utilization of any data files are amended, there must be full exploration of the effect of the change upon all the users. To permit this kind of tracking in the use of specific items of data, a data base manager must maintain a closely controlled cross-referencing procedure most often called a "data element dictionary." The National Center for Education Management Systems (NCHEMS) has for several years supported the concept of maintaining a data element dictionary and, consequently, provides a tremendous amount of technical support to implement such procedures within educational institutions. In addition to providing guidelines for consistent use of data fields, the data element dictionary indicates where specific kinds of data are available and identifies all the regular users of any piece of data. With this kind of procedure, no user finds himself suddenly without necessary operational data. Another great benefit from such cooperative monitoring efforts is that duplicate and unnecessary data gathering and storage can be eliminated, resulting in substantial monetary savings in both labor and computing machinery.

Considerations and Suggestions

While it is not the purpose of this paper to suggest that the institutional research office should assume responsibility for all reports prepared and departing from the institution, it is, however, envisioned that one frequently observed function of this office might be further developed and supported—that of being a clearinghouse for information destined for both internal and external utilization. A further suggestion is that this clearinghouse function needs to be more closely aligned with the function of the institution's data base manager in efforts to guarantee consistent definition and appropriate use of individual pieces of data. This joint effort would consider both the source and the ultimate use of data from the time the need for data is first recognized, through the process of designing computer programs for storing the data, and to the point where end-product reports are delivered and used.

Another probable responsibility of this function would be to serve as a clearinghouse for all queries received in the institution. These information requests are usually addressed to a variety of offices on the campus. What is reported and to whom is anybody's guess. It would appear that a satisfactory solution to this growing problem would be to have all external requests for information come to a central point, be logged, farmed out for necessary data where needed, but returned to the central recording point before the response is mailed. It is not unusual, for example, for two entities within an institution to spend hours of manpower and many dollars worth of computing time responding to duplicate requests from the same external office. When two requests are mailed to two different offices within an institution and there is no clearinghouse function for such requests, neither office can know of the other's involvement, and both may respond in their separate and different ways. There is no way to estimate just how much time and money is spent preparing data, if not duplicate requests, for similar information.

These considerations indicate a need for support in directions which would further define an information clearinghouse function within the office of institutional research and toward formal alignment between this clearinghouse function and the institution's data base manager function. But the sensitivity of these suggestions cannot be overlooked, for precedent, sometimes of necessity, has long been set. In most institutions, it is frequently felt desirable to operate on a completely independent basis; administrative areas are long accustomed to defining their data systems to store just that data they presume necessary and then freely changing data definition as their own individual needs change. Efforts to establish a clearinghouse function and to align it with that of the data base manager could appear threatening if not provided the full support of upper level administration. Even minimal efforts to channel all information requests through the institutional research office could be met with disdain were upper echelon support denied.

This paper, while not intended to present a detailed picture of possible solutions, is concerned with calling attention to a growing area of concern. It is the belief of the author that views and concerns expressed in this paper are generally shared by data base managers and computer systems personnel who frequently emphasize their strong interest in further developing the relationships and functions discussed in this paper. It is desired that, by presenting some of the existing problem areas, this paper will invite further consideration of ways through which the administrative function of an educational institution can be made more efficient and effective.

PLANNING FOR INSTITUTIONAL RESEARCH IN KUWAIT

F. Craig Johnson
Florida State University

The purpose of this paper is to report on a three-month mission to Kuwait, which was supported by UNESCO and completed in March, 1975. The overall mission was undertaken to establish a development office with institutional research as a principal component. The proposed functions of the development office were: to be a center for information needed, plan the orderly development of the University of Kuwait, improve the decision-making process, develop the curriculum, evaluate progress toward stated learning objectives, and introduce new technology into the university. The term *institutional research* was taken to mean those administrative functions which related observed performance to stated institutional purposes.

The mission was conducted in three phases. The first involved review of previous management studies; the second involved conducting interviews with University Council members, administrators, deans, and academic department heads as well as collecting student opinions using a questionnaire developed for this mission; and the final phase involved the drafting of a plan followed by detailed discussions of that plan with the rector of Kuwait University and the secretary-general.

Background

In 1975, the University of Kuwait was relatively new (founded in 1966), small (4000 students), undergraduate and professional (arts & education, science, commerce, economics, political science, law, medicine, and engineering) and traditional (established by Egyptians on the British model). It sought a workable autonomy within the Ministry of Education and a meaningful role as an instrument of regional development. It was well financed (operating budgets of around $20,000,000 per year and a building program of $500,000,000) and well staffed (all teaching staff members at all ranks holding a Ph.D. or other terminal degree). It was the only university in Kuwait and needed to operate within certain geographic, demographic, and economic conditions.

Geographic conditions. Kuwait is located on the Gulf, at the extreme eastern edge of the Arab world, at the center of gravity of the Islamic countries, near the mouths of the Tigris and Euphrates rivers and the obligatory point of passage to the Far East.

Kuwait University was very much aware of the geographic characteristics of culture the state wished to preserve, the historic role of Kuwait in the Arab world, the Islamic traditions, and the crafts of the sea. The development of a library, museum, or arts curriculum, for example, required specific information so that present practices could be viewed in the light of traditions, cultural values, and social developments. The university was actively engaged in regional development activities which needed detailed information that would help relate academic programs to the Gulf States and to the Arab world as a whole. Statistical reports and the analysis of regional data were needed to support university cooperation with the Arab world and international programs.

Demographic conditions. In 1950, there were fewer than 50,000 Kuwaitis living in the walled capital city of Kuwait. By 1975, the capital—a modern city with all the goods and services of an international trade center—housed over 400,000 citizens and an equal number of non-Kuwaitis. In the preceding ten years, the population in the secondary schools had increased by 20% per year and, in 1975, five students were enrolled for every one enrolled ten years before.

The university actively responded to the educational needs created by a rapidly growing population and helped translate the general population growth into projections of university enrollment growth. It cooperated with other planning agencies to make realistic estimates of the growing needs for teachers, engineers, doctors, lawyers, economists, etc., based, in part, upon the degree to which the population of Kuwait was willing and able to fill these professional roles. To help raise its general level of education, the university had to know the total plan for education in Kuwait and to know how university programs related to it. For example, so that consumption would be distributed and work disciplines established, it was a matter of national policy to provide employment for any Kuwaiti who wanted an education and it was necessary to assure the Ministry that this policy was being implemented by the university.

Economic conditions. The economy of Kuwait is a narrowly based one with a small population (under one million living in six thousand square miles, a rapid growth rate, and a high gross national product, resulting in a very high per capita income (around $8,000). Virtually the only source of income is oil, with almost all consumer goods being imported. In 1974, the annual financial reserve for city government operations was around six billion dollars.

Rapid accumulation of financial reserves of this magnitude placed a strain upon all agencies of the government to develop at a rapid rate. Universities, which traditionallly take time to mature, carry an extra burden when placed under pressures to graduate people from programs before the programs are fully developed. Rapid growth had caused planning parameters to change abruptly which created major problems when the parameter and/or the changes were based on inadequate or wrong information. At the same time, the university had to grow to meet new needs. It could not become paralyzed into delays and inaction. While the availability of money seemed to be a stable parameter for the next twenty years, the growth rate of the state of Kuwait demanded a prompt and informed response to changes in other planning parameters debated in a continuously changing environment. The university had to attend to shifting priorities and be able to specify, within the limits of conventional analysis, the consequences of actions taken in response to changing situations. It needed to look into the future and gather information on probable future events and their consequences.

University organization. The Minister of Education chaired the University Council which was composed of the rector, secretary general, seven deans of faculties, the under-secretary of education, a representative from the Office of His Highness the Amir of Kuwait, three prominent citizens from the private sector, and three citizens from the public sector. The rector was responsible for academic matters of curriculum, faculty, students, academic facilities, and evaluation of performance.

The secretary general acted as the overall supervisor of the administrative operations of the university. Five deans headed faculties of science, arts and education, law, commerce, economics and political science, and women. The sixth dean headed the College of Medicine and an engineering dean had recently been appointed. The secretary general was aided by two assistant secretaries, one for general services and one for finance.

The Problem

Previous management studies had established two types of problems: the reporting systems and the data systems.

Reporting systems. The problem of a reporting system was identified in 1974 by Arthur Young and Company who reported the following:

> . . . There does not seem to exist any structured and approved management reporting system. This is a serious shortcoming which prevents efficient management. The tendency, therefore, exists to request special reports to meet each problem and situation as it arises. Invariably such reports have to be submitted on short notice and they tend to be, therefore, neither complete nor as accurate and timely as they should and could be. (p. 13)

These consultants, along with the university committee which studied the problem, urged the university to establish some form of a development office.

Data systems. Problems with the data systems can be itemized as follows:

1. *Faculty data bank:* A systematic report needed to be developed which would identify the source of new faculty members, the number contracted for future employment, and the contract status of all faculty. It was felt that a faculty data bank would greatly complement the student data bank then being established; when both data banks were operational, some of the planning needs of other administrative units could be met. The Development Office was to conduct a project to accomplish this.

2. *Comparative data on admission and registration systems at other universities:* These data needed to be analyzed to show implications of the elective system for admission and registration because there was belief that many problems could be avoided if the consequences of decisions were made clear. The analysis was to be made by the Development Office.

3. *A program budget code:* Accounts had always been prepared by object code (salaries, expenses, building, etc.) and, therefore, an analysis of the cost of programs (teaching, research, public service) by units (colleges and departments) was difficult. Increased use of the computer helped some, but the major problem was still the need for an accurate system to code expenditures. A more profound problem was the need for a system which would allow each unit to assume responsibility and accountability for its own budget and which would give each unit the discretion to make fiscal decisions based upon program needs. The Development Office was to work with experts or consultants to help establish a system.

4. *Data for planning stores inventories:* A management survey of this inventory operation was expected to identify the data needed, rules and ratios for ordering, computer system applications, etc. A pilot study had been conducted by the Faculty of Commerce, and this assistance was found to be helpful. The Development Office needed to identify innovations from the general literature but would not become directly involved in any project as specific as this one.

The Plan

The plan for institutional research included the functions, methods, management, studies staff, and criteria for evaluation.

1. Functions and the related data: Teaching students (enrollment projections, demographic data, attitudes, etc.); Employing faculty (background and training, work-load analysis, working conditions, etc.); Designing curriculum (course load matrix, section size analysis, student credit hours cost, etc.); Utilizing space and facilities (room utilization, special instruction criteria, formula for cost analysis, etc.); Expanding resources (budget preparation, program cost allocation, manpower needs, etc.).

2. Methods and examples of data sources: Analysis of existing data (registration, payroll, etc.); Analysis by consultants (cost analysis of instructional TV); Questionnaires (student and faculty opinion surveys); Interviews (analysis of department operations); Systems analysis (management information system); Experimental research (evaluation of testing procedures).

3. Management tools: Job descriptions (director, institutional research, instructional development); Task analysis (projects, manpower required, trade-off analysis.

4. Institutional research studies: Studies of institutional data were to come from two sources: teaching and learning having to do with faculty, students, and curriculum; and administration having to do with administrative staff, capital, and fiscal affairs. Several methods were to be used to analyze these data. They were (in order from least to most man hours): existing data (in computer form), consultant's reports, questionnaire answers, interview reports, and experiment scores.

When studies were classified by this method, it was possible to approximate the amount of effort required for any group of studies selected. When man-weeks of work were tied to the task of analysis, it became clear that even a full staff could not possibly do all the studies. An institutional research professional was then to meet with the development office director and establish a priority for each project. With experience, the man-week work estimates were expected to change. New techniques (especially computer) could make major changes in the effort estimates. As new studies would be requested, old studies would have to be completed or discarded. New staff was to be justified only in terms of a careful study and adjustment of the task analysis.

5. Staff qualifications and duties: The major institutional-research-related staff positions were to be those of director and institutional research professional. The job descriptions that follow show the duties and qualifications of each. For all personnel appointments, it was assumed that normal procedures would be followed and that the national policy of giving preference to qualified Kuwaitis would be observed. These professionals were to be allowed to hold the faculty rank for which they were qualified in a regular academic department part-time so that they could teach and perform productive scholarly activities.

The director: The most important qualification was a record of administrative performance in which results had been produced tactfully and under difficult conditions. The ability to establish credibility by the production of useful reports of high quality was also important. The more objective qualifications, in this case, were more flexible and had to be weighed against proven administrative ability. The following would have been desirable attributes, but it was unlikely any one person could meet all of these conditions.

1. Teaching and research experience at the university level
2. Academic training in a quantitative area (mathematics, accounting, physics, etc.)
3. Administrative experience at Kuwait University
4. Administrative experience in a ministry of the state of Kuwait

5. Command of the English language
6. An advanced degree in education

The director would perform the following administrative functions:

1. Assist the secretary of the University Council in collecting and analyzing data needed by the council and its committees
2. Support faculty members in the identification and evaluation of innovations in the outside world
3. Supervise training of professional, specialist, and clerical staff in the Development Office
4. Supervise an ombudsman who would identify problems related to student welfare
5. Coordinate projects to develop university-wide areas and department-centered activities.

The institutional research professional: The academic qualifications of the institutional research professional were more specific. It was considered to be important that this professional be highly qualified, not only to gain credibility in a university community but also to keep the staff small in number and able to do many complex tasks. The institutional research professional was to hold a Ph.D. in institutional research.

The institutional research professional would perform the following functions:

1. Design and conduct studies on problems identified by the director
2. Initiate studies of university operations
3. Assist in the collection of data
4. Assist with studies related to the outside world
5. Present analyses of proposed decisions.

Evaluation

There were several recommendations made about the evaluation which was to be used to monitor the growth of the Development Office and the institutional research function.

If the Development Office was to be useful to Kuwait University, it should grow and expand with the university, but it should never be allowed to become too large (more than one and one-half percent operating budget) because it then would begin to be involved in internal problems (personnel, budgets, organizational structure) of the Development Office and would not have the time to devote to the problems of the university. There were certain factors which would cause the office to grow and these are noted below.

Useful reports: The more useful reports are to the user, the more he or she will demand. It is, therefore, very important to keep reports user-oriented by regular interaction with users.

Change: The more changes that are introduced into the university, the greater will be the information needs. The new course unit system illustrated this point.

Kuwaiti administrators: As the university moves from contract administrators with defined responsibilities to native Kuwaitis with general interests in the whole of the university, more information will be required of an interdepartmental nature.

Manpower planning: Several people view the main function of the Development Office as manpower planning. As this view prevails, more information and more staff will be needed.

Budget review: Several people view this as a function of the Development Office. The more the office engages in this kind of activity, the more information and staff will be required.

Computer development: This is perhaps the single most important unknown in the growth equation. Sophistication in computer management information systems, administrative procedures, and academic utilization will dramatically change the character and staff requirements of the Development Office. While the specifics are not clear, it is safe to assume that, as the computer applications grow, the need for additional data will also grow.

Reference

Arthur Young & Co. A report on the university reporting sytsem prepared for the ministry of education in Kuwait, 1974. (For further information, contact the Ministry of Education, Kuwait.)

OECD'S PROGRAMME ON INSTITUTIONAL MANAGEMENT IN HIGHER EDUCATION

Paul M. LeVasseur
Organization for Economic
Cooperation and Development

Aims and Background

Stated briefly, the aim of the Organization for Economic Cooperation and Development (OECD) Programme on Institutional Management in Higher Education (IMHE) is twofold:

1. to facilitate, within participating universities or equivalent institutions, the development of a capacity for better management of their affairs through interinstitutional cooperation

2. to provide for a wider dissemination of practical methods and approaches to institutional management.

The IMHE programme has been in existence for over nine years. Its first phase, involving eight associated universites, was sponsored by OECD's Centre for Educational Research and Innovation as a pilot exercise in conducting field-based studies on institutional management problems. Begun in mid-1968, it was completed at the end of 1971. During the second phase (1972–76), the programme functioned as one of the centre's decentralized projects. This is continuing for the third phase, which started in January 1977 and will continue through 1979. As such, while continuing to develop as an activity managed by the organization, the operational budget for maintaining its central staff is now entirely self-financed through annual, voluntary contributions paid by the institutions participating in the programme. Today, the programme serves approximately 100 member institutions in 19 OECD member countries.

The First Phase

The launching of the programme in 1968 coincided with a period of considerable student unrest in the European universities. This, coupled with the need to adapt to the requirements of centrally legislated reforms designed to reduce these tensions, caused universities to focus more attention upon the management problems facing them. It was clear, however, that the universities were ill-prepared for undertaking systematic examinations of their internal problems. In large part, this was due to the fact that the skills needed were generally unavailable due to the tendency of academics to remein within the strictly defined confines of their individual disciplines (economics, statistics, computer science, etc.).

In order to stimulate interdisciplinary research, teams of academics and administrators were set up in eight European universities to study different aspects of university management. Six major dimensions of university management were identified, namely: decision-participation, finance, information, student and staff flows, physical plant and equipment, and academic planning. The results of these studies were presented at an evaluation conference held in Paris in November 1971. The conference marked the end of the first phase and had as one of its purposes an evaluation of the work carried out during the first two years, with a view to making recommendations for future work. The programme, as it exists today, is the operational realization of many of the recommendations made at that time.

The evaluation conference recognized the need for, and the widespread interest in, the further development of specific approaches to university management. As a consequence, it was felt that a more systematic effort to organize and disseminate available information on university management methods was required, assisted by appropriate efforts by international organizations. Specifically, the conference recommended that the research and development efforts, which constituted the first phase, be used as a starting point for a more widespread and intensive effort of cooperation among those institutions wishing to initiate such research.

During 1972, all European institutions of higher education in the OECD area, as well as a selection of North American institutions, were invited, either directly or through the appropriate national authorities, to participate in the next phase. Those interested were asked to provide an indication of the types of activities which they wished to pursue and, where cooperative research was involved, to assign priorities to suggested topics. Based upon the responses, the central staff began to set up different services to be offered to members and to assist them in designing cooperative research projects. On the basis of the project proposals, governmental bodies and private foundations were approached with a view toward obtaining the financial support necessary to carry out the proposed work. In this way, support for several projects was obtained from national authorities and from companies of the Royal Dutch Shell Group in the countries concerned.

As the 1971 evaluation conference had recommended, a meeting of persons from those institutions which had expressed a definite interest in participating was called in January 1973 to consider a definite program of work reflecting their several interests and to make proposals for its organization and financial support. This meeting was the first general conference of member institutions of the IMHE programme.

The Evolution of Research during the Second Phase

If the approach to research in the second phase is to be distinguished from that of the first phase, the current approach may be characterized as more problem oriented. Rather than seeking to investigate some dimension of university management, research in the current phase has been addressed to some specific management problem which universities are facing. How can research be better managed? How can the retention and completion rates of students be improved? How can institutional performance be measured and monitored? What are the costs of the different teaching and training activities in an institution? These and other specific problems have been tackled in very concrete ways in research projects designed to lead to practical results.

The larger number of institutions participating in the second phase made it possible to identify groups of institutions facing common, or similar, management problems. Researchers and administrators from several institutions could then be brought together to jointly design a research project. A total of 56 institutions participated in the 12 research groups constituted during the second phase.

This cooperative approach to problem solving has several distinct advantages. Teams may design a common methodology for application in the different participating institutions, thus providing a test of its general applicability. A division of labor can also be agreed to by the group (e.g., one team sets up a classification, another defines data to be collected, a third studies the utility of different statistical procedures, a fourth designs a questionnaire, etc.) which can result in significant savings over an isolated, single-team approach. A pooling of intellectual resources and enlargement of the disciplines which can be brought to bear upon the problem is also a feature of this group approach.

There are, in fact, numerous advantages to this approach which have been demonstrated in practice. There is also an additional cost involved which arises from the need for coordination, but experience to date would seem to demonstrate that this cost is offset by the advantages, provided that the problem under study is of sufficient importance and general concern to merit a joint approach.

In several countries, the existence of IMHE research groups provided a basis for organizing informal steering groups comprising not only administrators and researchers in the individual institutions but also representatives of different national bodies with an interest in higher education. Since the viewpoints of individual institutions and national bodies often differ on higher education issues, a mixture of these viewpoints on a national steering group, especially one which is not formally constituted, provides an excellent opportunity for improved understanding. Although it is not possible to measure its exact value, this is certainly a by-product which can, in some instances at least, be looked upon as a positive contribution of the IMHE programme.

Although it is not the intent of this paper to describe the work of each of the 12 research groups, some examples of these projects will provide the reader with an indication of the types of institutional research undertaken. For example, a group of seven universities in France studies methods for calculating unit costs of activities and outputs. Until 1968, budgeting for all French universities was carried out centrally. More recently, however, reforms have been instituted which provided universities with more autonomy in deciding upon the internal allocation of the global amounts provided by the national authorities. For historical reasons, however, universities did not have at their disposal any adequate procedures for determining the unit costs of their different activities. Under this project, a common methodology was developed and tested for evaluating both the total and unit costs of teaching, research, and administrative activities within universities. In addition to testing its general applicability in France, universities in Belgium and Switzerland were included in the group for comparative purposes.

In Austria, a group of universities undertook a systematic statistical analysis of data on student success and failure during the students' academic careers. In this way, it was possible to determine the predictability of student success or failure on the basis of student performance in the earliest phases of their studies. The monitoring of such information provides a tool for improved student counselling.

In the United Kingdom, where there is a dual system of universities and polytechnics, these two types of institutions teamed together to carry out research on the identification and measurement of indices of performance for the teaching function in higher education. A framework for performance assessment, in terms of response to the learning opportunities, was provided, and resource utilization was developed and tested on data from Lancaster Polytechnic and Loughborough University for the academic year 1972–3. At a discipline level of aggregation, few significant differences in response were found, but quite different patterns of instruction, leading to very different unit costs, were identified.

In Japan, an investigation of patterns and practices of the decision-making process in institutional management involved the collection of detailed information and data from over 150 institutions on the evolution of their decision-making structures over the last 5 years. A questionnaire survey of the attitudes and opinions of more than 1,800 faculty members towards the decision-making process was also carried out. The study of decision-making structures showed that, following the campus unrest of the 1960s, many new committees were established, but, whereas participation was generally extended to junior faculty members in the process, little implementation of student participation in institutional management was noted. This was the case, despite the fact that the expansion of student participation had been strongly demanded either by students themselves or by many faculty reform committees established during the campus unrest. The survey of individual faculty members sought to reveal their attitudes on such matters as professional roles, the composition and conduct of faculty meetings, university governance, and reform.

During the first phase, the central staff itself carried out comparative research on the distribution of staff and space between and within the university-type institutions. This in-house research function was not continued in the second phase, however, in order that the central staff could develop new types of activities to be offered as services to the member institutions.

Services to Members

In preparing for the second phase, it was recognized that not all institutions would wish to be engaged in a cooperative research project. Many institutions surveyed had indicated that they were interested in joining the programme to take advantage of the opportunities it offered for an ongoing exchange of information in the field of institutional management.

A quarterly bulletin, *Phase 2*, was chosen as the means for keeping members informed about the different activities. The first issue, eight pages in length, was published in June 1972 and contained only information about the programme. During the following years, the bulletin was expanded considerably, both in length and coverage. By 1976, it had grown in length to 20 pages, and its coverage included invited contributions from individuals on subjects of professional interest, while it continued to report on the different activities of the program. Beginning in 1977, this bulletin will be replaced by a more substantial one, International Journal of Institutional Management in Higher Education. Addressed to managers and administrators of institutions of higher education, as well as researchers in institutional management, this journal will keep them informed of current international developments, trends, and related research.

There were a number of additional services organized under the program for assuring an ongoing exchange of information and personnel. In its Survey of Managerial Practices and Innovations, the central staff collected, organized, and disseminated to all its members, a large body of information on the state-of-the-art of institutional management.

The AIR-IMHE exchange program made possible the transatlantic exchange of 20 North American and 20 European specialists to attend meetings of the two organizations. Since most of the IMHE institutions are located in Europe, this exchange provided an opportunity for a cross-pollination of ideas between Europe and North America which was not otherwise possible, given the limited North American membership in the programme. Although it has been decided to discontinue this exchange in its present form, AIR and the IMHE programme plan to continue a cooperative exchange activity. In its new form, the programme will offer AIR members assistance in scheduling professional visits to Europe, and AIR will reciprocate when the IMHE members visit North America.

The Special Topic Workshops are another form of exchange which brings together administrators and researchers who wish to exchange views and research findings on particular problems in their institutions; e.g. problems of managing a geographically dispersed institution; problems of managing medical schools, etc. The biannual general conferences are additional occasions for the representatives of the member institutions to acquire information and exchange views.

Professional Training Seminars

Early during the seond phase, it was felt that the IMHE programme could provide a valuable service to its members by organizing professional training seminars at the international level on topics of current interest. As a result, a seminar on program budgeting was organized on an experimental basis in October 1973. In view of the favorable response of participants, a proposal was submitted to the Ford Foundation for a grant of $100,000 which made it possible to hold four additional seminars during the period from 1974 to 1976. A total of 524 participants from 18 countries attended the five seminars.

The seminar series covered a variety of topics. Included were planning models, information systems, student counselling, and research management. A set of basic documentation was prepared especially for each seminar and, in some cases, this documentation was supplemented with other materials and published in book form. The programme will continue to organize professional training seminars, the 1977 seminar being devoted to facilities management.

The IMHE training activities included other experimental approaches. A training course organized jointly with the Anglian Regional Management Centre in Danbury, England, was a small group, residential course which was highly intensive in terms of lectures as well as discussions (formal and informal) between participants and teaching staff. Another feature of this course was its division into three, one-week blocks of instruction, spread out over a period of six months, which gave participants time to reflect upon what was taught in each block and to apply and test some of the concepts in their own environments.

Another experiment was the touring seminar which consisted of a team of experts in institutional management traveling to different countries. The seminars were attended by over 220 higher education administrators, planners, and researchers from 8 countries and proved to be an effective means of reaching more interested persons than would have been possible if they had been held in another country. This, in fact, was the original purpose for proposing the touring seminar. The homogeneity of the backgrounds and interests of participants also led to a faster and better focusing on issues for discussion.

Membership

Any public or private establishment or institution responsible for higher or postsecondary education and belonging to a member country of the OECD may become a program member. Additionally, public or private nonprofit-making organizations, whose main concern is higher education and its management, may be selectively invited to join.

Although membership is open to institutions in any of the OECD countries, participation to date has been primarily in Europe, where institutions can derive the full benefit of the various meetings organized at OECD Headquarters in Paris. The result has been that the large amount of original and informative material which has been produced under the auspices of the programme has not received wide circulation in the distant OECD countries (Australia, Canada, Japan, New Zealand, United States). Seeking to remedy this situation, the directing group responsible for the overall supervision of the IMHE programme has studied ways of making available to universities, and other institutions of higher education, all materials provided to full members for a substantially reduced fee. Additional information pertaining to full membership and subscriptions may be obtained by writing to the following address: Programme on Institutional Management in Higher Education, 2 rue André-Pascal, 75775 Paris Cedex 16, France.

GETTING INFORMATION INTO COMMUNITY COLLEGE DECISIONS: STRATEGIES, IMPACT, AND IMPLICATIONS

Gary A. Rice
Yakima Valley College

At the outset, it is essential that several points be made as context for this position paper. First, accountability in higher education is currently a fact of life and will assume ever-encompassing dimensions. I particularly like the following nontechnical definition of accountability, although the author is unknown: "Every person (or group) in an organization is answerable (responsible), to some degree, to another person (or position) for something (or objectives) expressed in terms of performance levels (results or achievements) to be realized within certain constraints." Given this *Zeitgeist*, it becomes very important that decision making become more reliant upon accurate, relevant, and timely information.

Second, community college planning, policy formation, governance procedures, and decision-making processes will be increasingly influenced in a more direct fashion by external individuals and agencies. Among other outcomes, administrative duties, including both line and staff responsibilities, will become more managerial in nature. Also, there will be (a) more reliance upon medium-range forecasting capabilities and (b) a need to balance resources against identified community needs/demands. Finally, it will become increasingly important to explicate institutional goals and objectives for external groups as a framework for future decisions and performance evaluation.

Third, the notion that two-year college research and planning resides in a single office or individual is a misconception. Although the office should serve as information clearinghouse, this paper holds that planning and decision making are ongoing processes carried out at many levels by all staff members. Further, as the individual most knowledgeable about data definitions, explicit and implicit assumptions, and institutional context, the institutional research person has a service obligation that extends beyond data manipulation to the translation of numbers into alternatives.

Fourth, although it is essential to keep source data documentable and apolitical, the information officer should also provide low-profile assistance to the college staff in developing systematic decision strategies and a mindset for conflict management. Of necessity, he or she will become increasingly drawn into the political arena. The position advocated here is that two-year college researchers can no longer say, "I just generate the numbers but I don't make any decisions." They must keep information free of bias yet contribute their professional judgment, appropriately couched, when solicited. This concept will be developed more completely, with applicable constraints, throughout the paper.

Fifth, even though the National Center for Higher Education Management Systems (NCHEMS) models are principally oriented to four-year colleges and universities, the information system has been designed, modified, and structured to be compatible with the unique nature of the two-year college. As such, it places heavy emphasis on instruction and continuing education in nontraditional modes.

Sixth, the system makes no pretext of being a panacea. It is a sophisticated series of tools to (a) address simultaneously the myriad factors influencing an event, (b) encourage an individual to make his or her assumptions and decision process explicit, (c) establish an historical data base upon which the college can rely, and (d) shift institutional change processes from happenstance to predictability. Unless a college employs these methodologies, it could destroy the very thing it is trying to save. These processes, however, must be ongoing and repetitive rather than unidirectional. Finally, this paper diverges somewhat in style from the traditional technical-conceptual format and includes human reactions encountered when an entire college confronts the reality of accountability to the public it serves. This is a dimension of empirical assessment that institutional researchers have treated lightly in their quest for quantification. They must be more sensitive to charges that "they know the cost of everything and the value of nothing."

The next section will highlight briefly a comprehensive two-year college information system (MIS) framework and modeling/simulation capability. It will include development of a common language and organization of an institutional research structure for maximum impact to the unique natures of the two-year institutions.

A third section addresses itself to various impact points during construction and resultant empirical information availability. These impacts include perceived changes in level and quality of decisions throughout the college: on the board, administration, faculty, staff, and students. The final section attempts to project a probable evolution of these impacts on several areas: goal/objective formation, negotiations/college governance, staff awareness, accreditation, college-community relations, state agency/legislature-college relations, intra-college interdependence, grant development, program evaluation, and planning/forecasting.

Information System Structure

Figure 1 depicts a two-year college information/resource analysis system. Establishing such a system and integrating its output into decisions is accomplished in four general phases. The first phase centers around ascertaining a college's current data structure. Specific tasks include identification and definition of relevant data elements, charting information flow throughout the institution, and delineation of college mission, goals, and objectives. Also, one must identify the college organization-governance structure (formal and informal) including authority, responsibility and domains, current decision rules and recurring cycles or practices, and others. A second phase primarily involves construction of a data base. The circle in Figure 1 represents a computer-based, interfaced set of 8 master files containing basic components of an institution's operational existence. Each file, students, curriculum, facilities, programs, finance, professional personnel, classified personnel, and equipment, contains both static data elements which are secure, except for established modification procedures, and variable elements which are altered as verifiable changes are necessary. There are extensive edit-error routines both within and between files to maintain their completeness and accuracy. Each separate

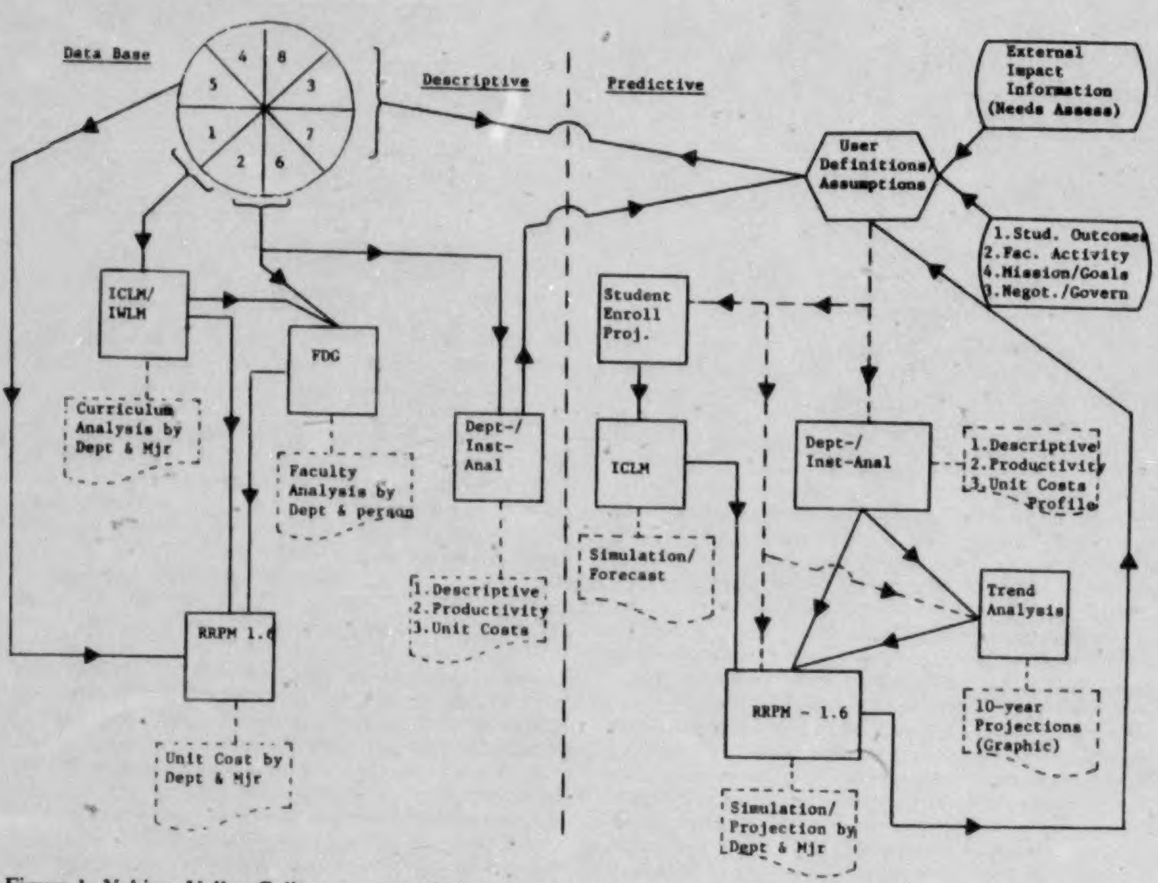


Figure 1. Yakima Valley College resource analysis system.

file produces a summary operational report while interlinked file outputs produce valuable management information.

Phase three (represented on the left side of Figure 1) involves operationalizing a descriptive information system. The resource analysis component programs are centered around NCHEMS and locally designed computer models. This information system is designed for administrative management, although the structure allows data base access for related research. Data from student and curriculum files provide input to produce and ICLM/IWLM by department and program. Faculty Data Generator identifies each staff member as a cost center as well as tabulating departmental work load. Finally, RRPM 1.6 produces a breakdown of direct and support costs by department and unit cost per program.

Besides the NCHEMS software, a local program profiles each department and instructor as in Figure 2. The department profile is divided into 7 sections: descriptive characteristics, student work load, full-time/part-time total faculty work load, additional resources, productivity indices, and unit cost indices. These values are compared to divisional and college-wide norms. Additionally, this program rank orders and graphs departments by any variable displayed. An instructor profile is essentially the same except for norms which include college average and full-time or part-time composite, depending upon instructor employment status. Finally, the program will also accept user-defined work load ranges, including expected value for both department and instructor patterns, as additional reference points.

Phase four contains the most sophisticated and difficult task series. Figure 1 shows a predictive/simulation capability utilizing descriptive software plus a locally created program that calculates appropriate regression equations from user-supplied input and graphically plots trend lines over a specified horizon. Major college reactions to outcomes of each phase will be subsequently highlighted.

Information System Impact

The MIS described above has taken approximately 2½ man-years to design and make operational. Impact on all segments of a college has been diverse, dramatic, and not entirely predictable. Possibly the best way to illustrate is by describing regnant system impact points and relating staff reactions as constraints and assumptions become germane.

A first significant impact occurs when the entire concept of a comprehensive, documentable information system is presented to top administrators and board for philosophical, financial, and staff endorsement. The information system operates on an implicit assumption that a college can be managed and that there is a greater probability of correct and prudent decisions when they are based upon complete information. An additional premise states that all information, and its derivation having a bearing, is open to all who are directly involved in the decision. A top-level commitment to institute and maintain this MIS usually produces ambivalent feelings within the board, president, and deans. In an era of faculty-administration confrontation, there are natural fears of exposing weakness and not understanding

Term:

(1) Total class sections . . .
(2) Total credit hours . . .
(3) Total student enrollment (HDCT) . . .
(4) Total student FTE (FTES) . . .
(5) Total student credit hours (SCH) . . .
(6) Total class contact hours (CCTH) . . .
(7) Total student contact hours (SCTH) . . .

(8) Average section size . . .
(9) Average class size (ACS) . . .
(10) Average student SCH load . . .
(11) Average student FTES load . . .
(12) Average student CCTH load . . .
(13) Average student SCTH load . . .

(14) Total full-time faculty headcount . . .
(15) Total F-T faculty FTE (FTEF) . . .
(16) Total F-T faculty direct instruct salary . . .
(17) Total F-T faculty fringe benefits (FRIN) . . .
(18) Average direct salary per FTEF (FSAL) . . .

(19) Total part-time faculty headcount . . .
(20) Total P-T faculty FTE (FTEF) . . .
(21) Total P-T faculty direct instruct salary . . .
(22) Total P-T faculty fringe benefits (PRIN) . . .
(23) Average direct salary per FTEF (FSAL) . . .

(24) Total instruction staff headcount . . .
(25) Total instruction staff FTE (FTEF) . . .
(26) Total instruction staff direct instruct salary . . .
(27) Total instruction staff fringe benefits . . .
(28) Average direct salary per FTEF (FSAL) . . .

(29) Direct support expenses (DSE) . . .
(30) Indirect/chargeback expenses (ICE) . . .
(31) Total department expenses . . .

(32) Average credit hours per FTEF ratio (PROD) . . .
(33) Average HDCT per FTEF ratio (PROD) . . .
(34) Average SCH per FTEF ratio (PROD) . . .
(35) Average FTES per FTEF ratio (PROD) . . .
(36) Average CCTH per FTEF ratio (PROD) . . .
(37) Average SCTH per FTEF ratio (PROD) . . .
(38) Relative faculty load (RFL) . . .
(39) Relative faculty effort (RFE) . . .

(40) Unit cost per student . . .
(41) Unit cost per credit hour . . .
(42) Unit cost per SCH . . .
(43) Unit cost per FTES . . .
(44) Unit cost per CCTH . . .
(45) Unit cost per SCTH . . .

Figure 2. Department analysis profile.

the system or comprehending implications of knowing what the college is like. Removed, also, is the security of arguing one's position from a unique frame of reference as parties are directed to prepare their respective cases from the same quantitative base. However, there is also a positive feeling which anticipates escaping continual, defensive reaction-to-crisis; rather, one can anticipate, identify, and resolve conflict from a secure information foundation.

A second impact occurs when one attempts to ascertain the current date structure of the college. To initiate the MIS, each college must identify its current organization/governance/management structure, its information needs and flow, goals and objectives, functional relationships and decision rules as reference points. In order for a system to be isomorphic with college structure, the sequence of activities in this construction phase is essential. Also, subsequent information system users must come to ordered and precise definitions of necessary data input/output variables. They must actively participate in the system design and implementation if it is to be effective. Typically, staff reactions are indifference or annoyance as they are asked to detail information needs and flow thoughout their domains, differentiate between their areas of responsibility and authority, define their essential data elements, become familiar with the concepts and lexicon of accountability, define how they make decisions or formulate policy, and relate effects of their actions upon other areas. When an attempt is made to develop common decision rules and data element definitions necessary to drive the model routines, one will hear such remarks as "Everybody should be accountable but me," and "You cannot quantify what I do, so I cannot be held accountable." Administrative exhortations about subsequent information utilization have little effect at this point. The staff does not accept a need to be held accountable, does not believe any system can handle complex interrelationships among units, and is generally suspicious of nefarious motives. There may also be negative reactions if staff erroneously perceives these tasks as a time and motion study which may disrupt established routines or eventually replace their jobs.

Formation of a planning advisory group to assist in system design and serve as a sounding board for tactics and strategies facilitates information system implementation. This group is composed of the formal and informal college leadership. Its members operate in an atmosphere of mutual trust, complete candor, and willingness to divorce themselves from parochial interests in order to address institution-wide perspectives. They have access to all information which does not violate individual rights. Written position papers are prepared for consideration by the president, deans, and staff. The information officer initially directs them as they become familiar with concepts but later becomes a technical consultant as they assume more responsibility and sophistication. This "Rand Corporation" approach provides a link between conceptualization and practical implementation. These individuals also serve as a buffer to assuage concerns that new ideas being proposed are not shallow, snap decisions.

A third impact occurs when descriptive summaries from the data base and resource allocation/expenditure models become available (see Figure 2). Each college group, (i.e., board, administration, division/departments, programs, instructors, classified staff, and students) peruses the information, and their responses cover a spectrum. Although all react with incredulity to the mind-boggling volume, comprehensiveness, and complexity of information suddenly available for analysis, there are discernable group differences. Board members are gratified that their capital investment has finally borne such bountiful fruit. There is also an initial tendency for them to desire more direct involvement in administrative decisions rather then to retain their proper role of policy formation. Assistance can be provided to help them understand how subsequent trend profiles will be of more value and teach them to ask the right questions in the right way. Top echelon administrators react favorably to the profiles and quickly incorporate output into their daily operations. After available documentation has confirmed some of their beliefs, it is easier for them to accept information at variance with preconceived notions.

Researchers must urge caution against a natural desire to institute sweeping changes based upon preliminary returns. System utilization must await the need to establish a sufficient data base, determine functional relationships over an appropriate time frame, and make certain that the model parameters have been properly defined. If a discrepancy exists between college reality and model, it is the latter which must be altered.

At this time, faculty and instructional support areas are introduced to the output. Staff reaction varies, but there is generally a heightened anxiety level and an increase in overt expressions of hostility toward the information officer. Staff cannot identify with an impersonal computer routine or printout, and they cannot physically attack top administration, so they probably will vent frustration upon the system designer. This is a critical time for incorporating an MIS into college thinking. Many challenges to system design and operation provide an opportunity to explain constraints and shift vitriolic feelings into creative energy.

The first challenge, typically, is data falsification for certain groups. It is important to demonstrate that system output is neutral and operates only according to definitions and decision rules which were college created. Besides being able to document in-house source data reliability and validity, the staff should be encouraged to seek outside verification that decisions made about the college by external agencies employ the same information. Also, model routines are logical, so the system assumes user-supplied input data and procedures for obtaining it are also logical, rational, accurate, and representative of institutional reality. This applies to output also.

Another challenge generally questions what is really being measured. The MIS is a process system, so staff and administration must be cautioned about seizing a unitary, simplistic efficiency index and then compounding the error by choosing a process rather than an output measure. However, the faculty allegation, that department/instructor profiles, productivity ratios, and unit cost values are not valid comparative indicators of contribution for resources expended, cannot be sustained. At the outset, such a system is designed around those elements lending themselves to quantification with full acknowledgement that, currently, there are no real definitions of outcomes to link with resource expenditures. Also, initial system structure emphasizes curriculum/program/instructor accountability although the design can accommodate support area inclusion. First use should examine relative relationships between departments or a single department across time rather than absolute values, and output must be viewed relative to a particular decision. The system is diagnostic rather than prescriptive, so administration and staff should be encouraged to develop profiles jointly over time before making far-reaching decisions.

A third accusation challenges the quest for uniformity and standardization which could destroy the very thing one is trying to understand. A corollary "1984—Big Brother" syndrome argues that computers will make ultimate decisions. One must be prepared to point out model/system constraints along with the analogy that one does not throw away a valid scale that is known to reliably weigh two pounds light; one merely adds two pounds. Some primary limits to highlight include the models' linear programming which makes them hypersensitive to enrollment fluctuations, their difficulty in handling inflation and marginal costs, the emphasis on expenditures with minimal attempts to tie them to revenues, and an illusion of decimal accuracy on output. Also, these models are designed for utilization as long-term indicators, not as budget models, although the staff tendency is to utilize them in the latter mode and attempt to discount the entire report when it does not show a budget penny match. Models do not indicate the efficacy of given alternatives, nor do they replace seasoned administrative judgment. Some information may be gleaned more efficiently in a manual fashion than by utilizing the models.

Finally, the sophistication and technical accuracy of system reports exceeds staff willingness to acknowledge that components of the educational process can be quantified. Likewise, their capability to comprehend the totality of factors inherent in any number generated through the computer routines develops slowly.

In response to Big Brother allegations, administrators must take a leadership role in demonstrating that their decisions include the information provided, including probable alternatives, but that they, not the computer, are still final arbitors, and responsibility rests with them. Once the staff accepts this fact and realizes that their solicited input, when empirically grounded, also has weight in the decision process, they begin to participate. With planning group assistance, all college segments receive in-house seminars on concepts and methods of simulation/forecasting utilizing the descriptive models in a predictive mode. They are encouraged to free their thoughts from traditional "it can't be done" and test new ideas.

A fourth impact occurs when initial forecasting attempts are made. First, the implicit expectation is that models somehow predict the future. Models do nothing more than employ user-defined decision rules to indicate the nature of the processes by which the future evolves out of the past and present. Second, models require that assumptions be explicated and queries properly framed prior to simulation. It is quite difficult for many staff members to confront the fact that their implicit assumptions and prescience are not always logical and rational, especially with colleagues. The information officer can assist individuals to organize their decision-making strategies and, thus, improve communication. Third, some users will carry out simulations ad infinitum in an attmept to avoid making a decision, while others will ignore the MIS potential and continue to rely on a binary decision-making device. Even though both techniques attempt to avoid setting priorities and defining most efficient use the system assumes that some optimum combination of resources does exist and has been defined by the users.

It is important that MIS staff have essential college management reports made routine in order to concentrate their talents as technical consultants, facilitators, catalysts, and service bureau. Additionally, an MIS office needs to coordinate college-wide information-seeking efforts to maintain or enhance an integrated program. This includes publication of an annual statistical compendium and graphic trend profiles. In summary, the information system must be acknowledged and utilized by the college as a Gestalt rather than merely a discrete computer data system.

Implications of the MIS

Although the time frame since implementation has been too brief to state documentable changes, some events have happened which could be directly attributable to the MIS. Also, logical extensions allow speculations about future uses of the system and new role dimensions for an information officer. Several distinct advantages have already emerged. They include: (a) a more complete and consistent reference frame for decision making and policy formation, (b) a greater staff awareness and acceptance of their interdependence, (c) a more complete understanding of resource utilization and contribution, (d) a facilitation of management/governance, (e) movement of college-wide planning from creeping incrementalism toward a recurrent cyclical process involving greater numbers and diversity, (f) a feeling by the staff majority that decisions are more equitable, democratic, and egalitarian in nature/scope, a greater flexibility in allocating scarce resources, more time before decision options need to be finalized, and a shift in decision making from crisis-reactive to anticipatory-planning. One can sense a greater level of confidence and firmness in the decisions being made. Concepts and vocabulary of accountability and husbanding scarce resources are now interwoven in staff conversations, and there is less fear of the "black box." The staff are beginning to express less concern about being folded, spindled, and mutilated, and they are engaging in creative problem solving. They are moving toward self-study in all phases of the college operation within an institutional goals and objectives context.

With college decision making moving to a higher plane, certain ramifications will accompany it. It is inevitable that decisions ultimately resulting in program/staff reduction-in-force or termination will be made, and litigation will shortly follow. The information officer will be called upon to explain MIS structure and operation to a judge and jury, and the task will be formidable. Besides being in an adversarial situation, he or she will have to explain the complex intricacies of measurement, evaluation, simulation, modeling, decision-making processes, and accountability to a lay group in an extremely short time period with large dollar amounts at stake. The distinction between neutral, objective information and subjective structure which led to the outcome will be difficult for lay people to keep in perspective.

Another area where the MIS and information officer will enter the political arena is an interface between local planning and state system planning. Currently, most colleges find a disparity between their local management groupings and the way they are viewed by various state and federal agencies. Even with the advent of HEGIS (NCES) and PCS (NCHEMS) coding schemes, it is still essential for a college to take the initiative in defining itself before external parameters are imposed. In an era of projected student decline, fiscal constraints and retrenchment, when differences exist which affect resource allocation or expenditures, the MIS officer may be called upon to assist the president in negotiations with state and federal funding sources.

A perennial college problem is the large amount of staff time and effort expended to consistently respond to myriad state and federal requests for information "yesterday". Just when one fathoms the answers, the questions are changed. When a college cannot be sure whether reference points have changed or whether they merely represent the same points viewed differently, it is essential that the college decision makers have an internally consistent base for their own decisions. An MIS provides this, but the research office will have to establish congruence with external data bases containing the college data.

Besides responding promptly and accurately to information requests, a researcher can provide valuable assistance to the grant development office. In addition to rapid information access for meeting federal deadlines, this system allows for comprehensive follow-up/audit. It is also designed to drive off state agency input record formats. This allows the college and information officer to (a) make a direct impact on state long-range planning processes and (b) adapt the MIS to other community colleges with minimum modifications.

The adaptation capability produces another merging role for the information officer to serve. Forming regional inter-college consortia allows several colleges to pool resources, including the establishment of comparable units and definitions. Given the state of the art in this area, colleges need to maintain their definitional integrity as context while determining common definitions and standards. Just as words are merely sounds until they are given meaning by a user, so too is the comparability of units between colleges meaningless until definitions are negotiated. An MIS officer is in a position to strengthen relations between colleges utilizing information as a common bond.

The MIS officer will likely be drawn out of the ivory tower into college/staff negotiations. Besides putting common information on the table for both sides to use in constructing their respective positions, the system itself will become an integral element as position implications are simulated. At this point, the researcher faces a moral and ethical dilemma of extrapolating point-counterpoint yet remaining impartial to both sides. He or she may also be called directly into negotiations if the system structure and operation itself becomes an issue, i.e., establishing work load standards and procedures, policies and criteria for curriculum/instruction evaluation, dismissal criteria, governance structure, and others. Finally, the negotiated agreement must be examined in detail before ratification to assure that MIS freedom and flexibility has not been impaired by either party.

It is a fairly safe assumption that accreditation agencies will require more objective and empirical indicators of a college's efficiency and effectiveness in reaching their stated goals and objectives. The information office will play an increasing role in two ways: (a) the preparation of an annual statistical profile, trend analysis, simulation, and follow-up will provide extensive documentation for institutional self-study and (b) the system structure could become an integral component of accreditation requirements throughout the region.

Another area of significance is college-community relations. As consumerism and affirmative action become potent forces, students and college district taxpayers will demand empirical evidence of equal opportunity and return for their educational dollar investment. When it is necessary to present the college case to various special interest groups, occupational program advisory boards, or district patrons at levy time, a favorable vote is more likely if they receive valid information. The information officer can assist the staff in preparing such literature and may be called upon to address citizen groups. Another service the information office may be asked to provide is consultancy to district high schools, city governments, special interest groups, etc. As a clearinghouse for information, and backed with technical expertise, the research office is in a unique postion to influence community support for the college and its mission.

This paper has advocated that community college institutional research officers have a professional obligation to forestall standards erosion, while practicality demands that they go beyond system construction to get valid information into college decision-making processes. This includes assisting the staff to determine analytic/simulation capability and design implement change strategies, as well as ascertain the appropriateness of such changes. Finally, they will be called upon increasingly to translate these concepts to those external forces influencing the college. More and more their influence will extend into all facets of the institutional operation. Thus, researchers must be extremely sensitive to the potentially awesome power they could wield. While they should not take themselves too seriously, they must take what they are supposed to do quite seriously. If one is the primary designer/definer of such a comprehensive MIS, controls data input, and interpretation of output to individuals not schooled in its constraints, the possibility of creating an empire is present. Therefore, system development should proceed from directive to suggestive/supportive. When the MIS is operational, an information office will provide its greatest contribution by being merely a felt presence and a service bureau within its resource constraints.

INFORMATION REQUIREMENTS FOR STRATEGIC PLANNING

Donald L. Shirey
Mary Ann Kissel
University of Pittsburgh

Change is the sustenance of higher education. Beginning with the post-Sputnik era, we have witnessed unprecedented change and intense activity in our educational institutions and in the environments in which they operate. It is becoming more and more evident to educational planners that forecasting future trends by extrapolating from past occurences results in projections of limited utility over a short time period. Forecasting accurately the changes in postsecondary education cannot be done independently of the other social forces that impact on the human decision-making processes. These factors are too closely interrelated to permit one to be forecast apart from the others as is done in some of the normative forecasting models. We have found that we cannot plan/design the future of the university without considering how that future impacts and interrelates with other areas of the community and with the larger sectors of society as a whole. These sectors—business, community, government, industry, and public—act in concert with factors that are political, economic, cultural, and technological by nature. The alternatives available to the planner precipitate from the interaction of these factors in the various sectors of society. In some cases, these interactions greatly expand the number of available options; in other cases, they reduce the number. The objective of forecasting is to plan for change so that it is orderly, not chaotic and so that the institution is not caught off guard and unprepared for unexpected changes. If enrollments decline significantly, as they are almost certain to do at many institutions in the next decade, an orderly retrenchment must be planned and executed. Care must be taken, however, to insure that any planning for retrenchment does not sacrifice the effectiveness of the institution's programs which constitute its strengths and regress them to a level of mediocrity. Careful planning will obviate arbitrary and capricious decisions on the part of administrators and minimize the hardships created when the faculty and support staff must be reduced accordingly.

To plan successfully for future contingencies, accurate and pertinent information must be available to the planner along with an objective analysis of those data. Misinformation or misinterpretation of information could lead to academic and financial failure. A number of institutions of higher education have had to face such disaster. It has been suggested that the optimism of the decision makers at these institutions was encouraged by their lack of sufficient information and supporting data.

To promote orderly growth or retrenchment and to prevent future disasters in higher education, much more sophisticated approaches to planning must be implemented than have been used in the past. Forecasting provides the peephole through which possible futures can be glimpsed. Forecasting tells the planner where change may be needed—what to strive for and what to avoid. It tells him what is likely to happen in the future.

Forecasting is based on a set of meaningful assumptions, relevant data, and an understanding of the relationship between events and trends. The forecaster's role is twofold: first, to develop reliable forecasts, and second, to help bring about the desired change. The latter carries with it the responsibility for deciding what the desired change is and how it will impact on human or environmental considerations. This paper will focus on the kinds of information and the data bases needed to support strategic planning in institutions of higher education. Data bases, as used here, should not be thought of solely in terms of data stored in digital or other machine-readable form on discs, tapes, or in computer memory, but, in a larger sense, as data that have been purposefully collected, recorded, and organized in such a way that they will serve to help a decision maker in selecting from among alternatives.

The common denominator for all strategic planning in higher education is the revenue available to the institution. Strategic planning, by necessity, revolves around available revenue and projections of that revenue on into the future. Four major sources of financing higher education have been identified as (1) tuition, (2) state and federal subsidies, (3) private, federal, state, and local research funding, and (4) grants and endowments. The establishment and usefulness of data bases related to these sources will be explored in the remaining sections.

Enrollment Data Bases for Forecasting Tuition Income

For most colleges and universities, tuition is the largest single source of income. It is obtained either directly from the student or indirectly through state reimbursements. In either case, it is directly related to the institution's enrollment. Thus, enrollment is the first and most important factor that must be considered in the production of a planning model. To build a feasible model, good enrollment data are necessary. There exist, however, a number of participating forces both within and outside the parameters of the academic macroenvironment that influence enrollment. Figure 1 displays a number of these internal and external forces that can influence the enrollment stability of an institution. The factors shown on this chart are exemplar and are not intended to be an exhaustive list. Many other relevant factors could be added, or some of those shown might be eliminated, depending upon the time frame for which the planning is intended.

Before examining the factors that surround and influence the enrollment circle, a discussion of enrollment and the utility of an enrollment data base for planning is needed. Enrollment data, in essence, tell whom the institution has served in the past, whom it is serving at present, and whom it will serve in the future. Enrollment data thereby serve as the basis or beginning for the strategic planning process. The enrollment statistic is the barometer of the institution because from it the faculty size, financial needs, space requirements, and other requirements of the university can be estimated. It dictates immediate needs in relation to class size, faculty utilization, dormitory facilities, and auxiliary services. In addtion, management decisions as far distant as the next 10, 20 or 30 years must be based on enrollment projections.

Some of the variables an enrollment data base should

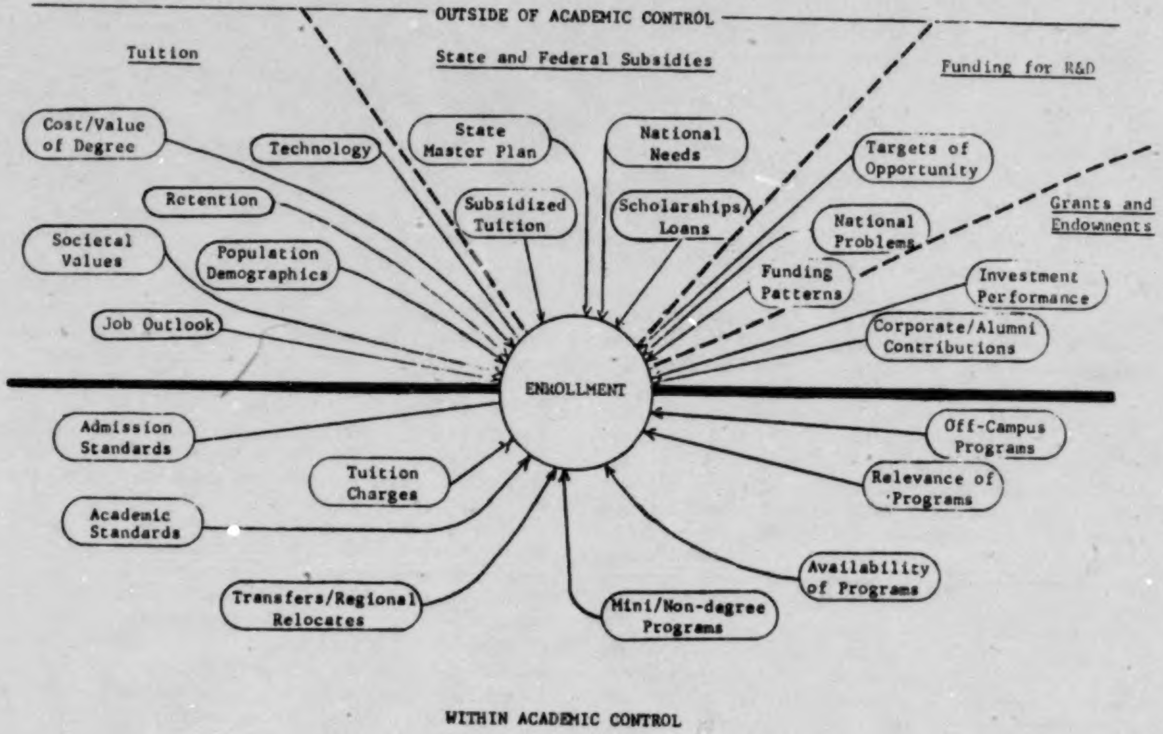


Figure 1. Forces within and outside of academic control influencing enrollment.

include are the number of students enrolled by county and state residence, school, department, undergraduate, and graduate status, full- or part-time status, sex, race, and class level. Both current and historical data should be collected. The usual point of reference is the fall term or semester; however, separate data for each term should be available. One function of term and yearly data collections is to derive attrition and retention statistics. If the data are in machine-readable form, a computing facility will be able to aggregate and cross tabulate the data and print out frequency distributions for all variables. If however, in the strategic planning process, innovations are introduced which will shape or change the current enrollment pattern, this information must be incorporated into new enrollment projections. For example, if an institution is alerted that its enrollment is declining, and a decision is made to introduce new programs not previously offered, valid long-range enrollment projections must be changed to reflect this decision.

A second important area which requires data base building is the retention and attrition rate of students. Information in this area is vital to building a Markov probability transition matrix which is a useful input to a planning model. It should be possible to answer such questions as the following: What percentage of an entering freshman class drops out each term? What percentage goes on to graduate? Which departments show an enrollment increase or decrease? If students leave the institution, it may be possible to determine whether the reasons were academic, personal, or financial, and if transferring to another college, whether it is because the current institution does not offer a program in their area of interest.

Another dimension of the enrollment model that needs to be considered in data base building is the policies of the local, state, and federal funding agencies. How much direct aid is available to students and the institution? What areas of vocational training or research are being funded or being phased out, and how long are the terms of commitment? If existing space cannot house long-range commited projects, strategic planners will have to decide whether to rent, buy, or build adequate facilities. They will need to know whether the situation is temporary or whether long-range expansion is justifiable. Data to support the decisions are essential.

Forces impacting enrollment that are outside of academic control. A number of forces which impact on strategic planning are outside of academic control. They are of an economic, technological, demographic, and cultural nature. These forces must be continuously monitored and both current and historical data collected.

Economic data bases. Economic forces include the job outlook and the growing concern about the value of a college education. Doubts about the usefulness of a college degree, especially in the liberal arts, in terms of getting a good job, sometimes outweigh the positive benefits that may accrue from a college degree. Such doubts have probably been a major factor in the decline in the proportion of high school graduates that go on to college. This proportion, according to the National Center for Educational Statistics, is 47 percent today, down from a peak of 55 percent in 1968. Monitoring this proportion is vital, not only nationally, but more importantly, in the geographic region from which the bulk of the institution's student body comes. Higher tuitions and the bleak outlook at the market place are blamed for this reduction. National employment needs and prospects must be examined for trends which will help identify academic programs that may suffer significant drops in enrollment because of a tight job market.

Education is the best example. The data were there in the late sixties, crystal clear, showing there would be fewer students at the elementary and secondary level to teach. Also, with unionization and higher salaries, there would be a slower rate of turn-over in personnel which would lead to a rapid saturation of the job market. Yet colleges and universities continued to produce teachers far in excess of demand long after the handwriting was on the wall. Other disciplines and professions need constant monitoring to keep them synchronized with the national employment needs and job outlook. The *Occupational Outlook Handbook* published by the Bureau of Labor Statistics may serve as the nucleus of data requirements for making decisions about future enrollment levels by discipline.

Data bases related to technological developments. Data base builders must be alert to new career horizons that are developing or will inevitably arise from new technology. It is now reported that over one-half of the nation's gross national product is generated from information-related goods and services (Porat, 1976). What new technology will emerge from this evolution and what forms of postsecondary education or training will be needed to prepare people for these occupations? Will higher education continue to move away from the liberal arts tradition to become more vocational in its orientation? If so, what are the consequences for educational planners? What are the cost/benefits of the alternatives to a college education? What options are now open or will be opening up? What are the various payoffs? What value or worth is attached to each of them? If information related to these types of question is available from data bases, planners will be given a glimpse of the climate and potential future demands on the university and its educational delivery systems. It will help in discerning the most desirable future and the possible ways of achieving it.

Just as technological developments in industry proffer new products or new processes to increase income or to cut costs, so do they offer the same opportunity for education. A new breed of professionals will be required to utilize new technology, and there will be new opportunities for higher education to train them. Colleges and universities will be watching developments in computer-aided instruction, in cable television, and other forms of telecommunications as alternative methods of delivering education to the consumer. Universities must constantly be on the alert to new technology or methods that will increase their education-delivery capacity or reduce their costs. Information has to be assessed in regard to these questions: How will technology impact with education and with society? Will it change society's values? What causes values to change anyway? Information is needed about (a) how the media, with its programming, creates desires for the future; (b) how social dissatisfcation translates into pressure to change things; e.g., how a lack of stimulating, interesting jobs for college graduates translates into disinterest in a college education and a search, instead, for alternatives with better payoffs; (c) how the relationship between changes in technology and changes in life style leads to changes in what is valued; (d) how much a parents' glimpse of a better life for their children influences the decision of these children to attend college; (e) how our social institutions accomplish the change in values—through formal education in our schools, through informal education within the family and among peers. Sociologists suggest that a change in a society's value system begins with a small group and, with a snowballing effect, grows in acceptability until it is embraced by the majority. Insights into these factors are vital to strategic planning.

Demographic data bases. Population demographics can be a valuable source of information for strategic planning. Centers have been established in various parts of the country primarily to study the socioeconomic and demographic variables that impact on a community and its educational systems. The University of Pittsburgh's Center for Urban Research is an example of such a center. Demographic data will tell the planner the expected size of the pool of prospective freshmen enrollees. Once again, national data are not as important as data from the geographic region from which the bulk of the students come. As a case in point, the Western Pennsylvania region supplies over 90 percent of the undergraduate student body attending the University of Pittsburgh. Even more important than the number of youngsters living at each age level in this region is a data bank which includes their post-high school intentions. Are they planning on postsecondary education? At what level—2 year, 4 year, graduate, first professional? Have they selected a college or university? What are their career interests? An updated file, with data collected in the junior year of high school, would provide a basis for profiling the potential pool of future applicants and gearing university planning to their career interests.

There are other demographic concerns. Beginning about 1980, students, in the traditional sense, are just not going to be available in the same numbers as they have been in the past. The National Center for Education Statistics reports that approximately 49 million students are currently enrolled in our elementary and secondary schools. By 1980 that number will drop to under 45 million. It has been dropping steadily for the past six years, beginning with the elementary grades. The decline will spread with ripple-like effects through the secondary levels until it reaches the nation's colleges about 1980. The enrollment growth at many colleges and universities has already leveled off during the past three years. Many institutions not already employing open admissions policies have been able to maintain enrollment levels by lowering admission standards; i.e., moving toward open admissions. Most institutions will survive the economic crunch that will accompany declining enrollments. Some will not. It is expected that many of those which do not survive will find their students redistributing themselves at those institutions which do. Thus, the latter will be able to maintain their enrollment at levels which will allow them to continue to survive.

There is no end in sight to the declining student population problem. The declining birth rate, which accounts for the smaller enrollments, has not leveled off yet, according to the National Center for Health Statistics. It has declined steadily from a peak of 3.76 children per woman in 1957 to a record low of 1.75 for the year 1976.

Declining enrollments are going to force colleges and universities to diversify their offerings in order to attract new clientele. Students, other than those which fit the traditional mold, will be actively sought in all walks of life and at all age levels. Adults in continuing education and skills-updating programs will be heavily recruited as the population grows older and the median age of the population steadily increases. Demographic information related to this age group and its anticipated needs has to be collected so that the transition to more and more adult education programs will be smooth and productive.

Data bases related to cultural factors. Cultural developments are going to impact with greater and greater severity on the demand for the university's product, an education. Enrollments in higher education have begun to shrink and will continue to shrink due, mainly, to a leveling off of the number of high school graduates going on to college and a projected continuation of the declining number of students graduating or due to graduate in the next 18 years. Other cultural developments are also fueling the decline in enrollments. In the late sixties, there began to emerge a new value system among a small but vociferous group of our nation's youth which saw little relevance in a college education to the conduct of their lives. Jobs were, and still are, hard to find, even with a college degree. A college education no longer automatically opens doors to an interesting, stimulating, high-paying job. Union membership can also guarantee high pay with job security without an initial heavy investment of time and money. The steady rise in tuition costs has placed severe constraints on the ability of the middle-class families to educate their sons and daughters; they are being priced out of the market. It is increasingly more difficult for middle-class families to qualify for student financial aid. Whether this anti-college sentiment and financial burden will continue to grow or begin to diminish will have a tremendous impact on the future demand for a college education. Changing cultural developments reflected in the values and life styles of our young people must be monitored and incorporated into strategic planning models.

Factors within the university's control. Up to this point, factors usually *beyond* the control of the academic institution have been discussed. The next section will explore the areas normally within the control of the institution. Many of these are closely associated with the capability of the university and the cost-benefit of its educational delivery programs. Capability is measured in terms of faculty, support staff, and educational research environments. Such things as tenure, salaries, teaching loads, unionization, retirement, as well as age of buildings and lab equipment, must all be taken into account in planning the future. For example, programs offered by the institution can be made available at other sites or discontinued entirely. If a program is to be instituted, the time frame within which it is to be introduced needs to be known by the strategic planners. Other factors that will have to be considered, and for which data must be available, are: the number of faculty that have to be hired, the student body size expected eventually to be served, cost estimates, and space requirements. On the other hand, if programs or departments are being phased out, the impact that will have on long-range plans needs to be assessed. The same type of care in addressing enrollment changes and facility requirements would apply to part-time, mini, and non-degree programs.

The next factor under academic control is the institution's admissions policy. Available data bases should be able to answer questions like the following: Has the pool of potentially qualified candidates been exhausted? Would changing the criteria for admission increase or decrease the pool of potential students? How far can admissions standards be lowered without sacrificing academic standards? To what extent are qualified students, including minorities, being recruited?

Another major factor which is within the control of the academic institution is tuition charges. Sufficient data should be collected to determine the impact that tuition increases and decreases have on enrollment. The data can be plugged into simulation models to estimate the revenue that will be gained or lost by changes in tuition rates. To what extent does a tuition increase change the composition of the student body? Are the changes desirable?

Yet another important aspect to be considered in data base building for strategic planners is the relevance of academic programs with respect to the needs of the academic community. Are the courses and programs students want being offered? One way of answering this question is through the distribution of questionnaires. Surveys are not only convenient for assessing the current climate but they are useful in directing long-range planners. Input from students can be helpful, also, in dispelling the notion that administrators make decisions while sitting in their ivory towers not knowing what students really want or need. Questionnaires distributed to high school students enable data bases to be built around the educational and career interests of those who will be served in the future. The ability to serve their interests can be assessed and future alterations can be taken into account during the planning process. Participation of the adult community through questionnaires can lead to better planned future programs for those institutions that offer adult education.

Data Bases Helpful in Assessing State Subsidies

Information about educational planning at the state level also plays a key role in strategic planning. The university's educational mission relative to the other educational institutions in the state or region needs to be put into perspective. The state's master plan for higher education, if such a document exists, may be useful for this purpose. What changes are evolving in the state's master plan? Are the undergraduate programs at the universities to be phased out and graduate and professional training to become their *raison d'être*? Will the state at some time in the future decide its employment needs and set educational quotas accordingly? Will the state go even further and decide which of its citizens should receive post-secondary education? To what extent? At taxpayers expense? If so, through direct aid to the students themselves, whereby they select the institution they wish to attend, or directly to the institutions so that they would select the students to receive financial aid? Different planning requirements would accompany either of these alternatives.

Data Bases to Monitor Federal Support of Research and Development

Government impact, at both the state and federal level, is hard to assess and monitor. Probably none of the large universities could operate at the level it currently does without federal and state support. Almost overnight, some of these universities with large research centers have come face to face with a major budget crisis because of a substantial reduction of federal money for support of research and the training of graduate students. Other national philantropic foundations are uneasy about the new laws that have been passed or proposed that would have a direct bearing on their tax exempt status. Other pressing national problems of an energy, environmental, health, and welfare nature are in need of huge federal appropriations to support them, a fact which may cut into the money available for general support of higher education. There is a need to have available, and to incorporate into strategic planning, information from analyzed data bases which relate to federal support of research and development. Information as to the trends, based on past funding patterns, that are useful in projecting future levels of funding to colleges and universities must be collected, organized, and implemented into planning models.

To monitor federal R&D activities, the National Science Foundation (NSF), conducts a program of intramural and sponsored surveys of R&D spending during each ensuing fiscal year. This has resulted in an extensive collection of data and detailed analyses of programs related to the nation's science and technology resources. These statistical data (National Science Foundation, 1976) have become a useful tool in projecting future trends in federal R&D spending and, in turn, in formulating the university's planning and budget proposals.

Any number of unforseen factors can significantly affect the level of federal R&D funding. No one, for example, can predict which national issue on the horizon (or beyond) will stimulate sufficient public interest or debate to be transformed into legislation and massive R&D funding (as was the case with the Energy Research and Development Administration); or an impending international crisis which may alter the national R&D funding pattern. Such unpredictable factors are beyond the scope of the data collected by NSF. The data can be related, however, to other economic variables to show their relationship to the level of R&D funding and to help identify the factors responsible for these relationships. Given such relationships, the next step is to assess the extent to which these same factors might impact on future funding.

Federal funding for R&D is an important source of income at the University of Pittsburgh as it is at other colleges and universities across the nation. It contributes approximately one-fifth of the annual budget and is subject to all the vagaries that accompany the distribution of federal dollars for R&D programs at educational institutions. These monies are not distributed equitably or proportionately, or according to a plan, but competitively through a system whereby proposals for R&D are evaluated and referred, with winner taking all. There is no ceiling on the amount any one college or university may be awarded in a given fiscal year. Since the system tends to reward those who have successfully completed their previous contract(s) and who have the personnel and physical resources to accomplish what they propose to do, it is easy to understand why some universities come away with the lion's share of the R&D funds earmarked for colleges and universities. While it is possible to increase the university's share of these monies, it must be recognized that competition in the future will be intense as enrollments shrink and institutions of higher education try to make up for the accompanying dollar loss by increasing their share of federal R&D funds. Increasing that share cannot be approached helter-skelter. To be competitive, the university must submit proposals that are in areas the federal agencies have earmarked for research and development. But there is more to it than that. To be competitive requires a great deal of careful planning, an assessment of the university's strengths and weaknesses, and a deliberate exploitation of opportunities. A key to this process would be an assessment of the direction of future funding for R&D at the federal level as it relates to a given college or university. What are the best bets for future R&D? What data bases need to be organized and tapped to support long-range planning in this area? What mini-studies, if any, need to be conducted to support this strategic planning activity? And what changes should be made with respect to programs, faculty, students, and research in order to be able to positively exploit the opportunities that will arise in the future?

Data Bases Related to Grants and Endowments

The last of the four major sources of financing for higher education is grants and endowments. The educational planner needs to incorporate into the strategic planning models data on current income from these sources, as well as projections of future income. To what extent is the university relying on these sources? Is the level of dependency increasing or decreasing? Data on the performance level of the investments is needed to insure that a maximum return is generated. These data, in turn, can be given to a professional financial analyst for appraisal and recommendations.

Utilization of data bases for statistical analysis. Many statistical approaches and a number of simulation models are available for manipulating data for strategic planning purposes. There is no absolute right or wrong method, but some methodologies are better suited than others. The criterion for choosing the best methodology is the purpose for which the results are intended or the questions to be answered. Futuristic trends and educational predictions are the main concern of strategic planners.

Summary

Forecasting is beginning to develop as a science. With the current state of technological development in data bases and information systems, the need to anticipate the future and plan accordingly for it is becoming a reality in higher education. Data bases to support demographic forecasting are in the highest level of development, followed by economic data bases. Data bases are becoming available to help assess the developing technology and the new career horizons that will spin off from it. There are data bases being built in the area of federal funding for R&D and for federal support to universities and colleges. State master plans for higher education are helpful, when available. Data bases to support cultural forecasting, however, are primitive, neglected, and most in need of development.

References

National Science Foundation. *1985 R&D funding projections* (NSF Report No. 76-314. Washington, D.C.: U.S. Government Printing Office, 1976.

Porat, M. *America: The first information society.* A paper delivered at the annual meeting of the American Association for the Advancement of Science, Boston, February, 1976.

ALLOCATION OF STATE FUNDS ON A PERFORMANCE CRITERION: ACTING ON THE POSSIBLE WHILE AWAITING PERFECTION

E. Grady Bogue
William E. Troutt
Tennessee Higher Education Commission

Formula Funding: An Overview

In the United States, funds for public higher education are generally requested and allocated on the basis of an enrollment model or formula. Linking funds directly to the number of students served, given their level and field of study, has become educationally and politically acceptable.

Allocation formulae in most states represent an improvement upon earlier allocation models that relied primarily on an analysis of per-student appropriations. These earlier allocation models were themselves an improvement over the preceding allocation method based on presidential lobbying for funds.

Objectivity, equity, and simplicity are strengths that those favoring formula funding attribute to this approach. Formula funding has helped minimize political warfare and open competition among institutions for scarce funds. An appropriations formula provides state officials with a simple and understandable basis for deciding upon institutional requests for appropriations. Equivalent support for equivalent programs is widely understood as the rationale for a formula approach to funding. Most formulae recognize the number of students enrolled and the mix of educational programs by type and level.

Soon after funding formulae were implemented, however, criticisms began to surface. Prominent criticisms include charges about appropriations formulae:

1. They are inclined to impose a leveling effect upon the quality of educational programs. The use of average costs for formula instructional rates tends to homogenize institutional diversity. The costs of an exceptional academic offering are averaged out by the costs of typical offerings of the same course by other state institutions. Programs funded to be identical are continually reinforced to be identical regardless of the clientele served or the special character of the institution.

2. They provide no incentive for improved instructional performance. Instructional rates are the same regardless of the effectiveness or ineffectiveness of instructional performance. The emphasis is on quantity rather than quality.

3. They encourage a displacement of institutional goals. The goal of serving students is displaced by the goal of obtaining more students. Formulae tend to become ends in themselves.

4. They tend to utilize a linear approach which fails to recognize both economies of scale and plateaus of fixed or marginal costs. As a result, formulae are great during periods of enrollment growth since unit costs decline while revenues increase.

Coupled with these criticisms is the possibility that formula funding is ceasing to be an acceptable public policy. Hopefully, acceptable public policies express societal values. From the late fifties until the early seventies, higher education was growing, and society wanted to encourage this growth. As an acceptable public policy, formula funding reflected society's willingness to support higher education's growth. Today, however, the public no longer sees the growth of higher education as a virtue in itself. As a result, a policy of funding public higher education solely on an enrollment basis may be viewed as out of harmony with the wishes of society.

Performance Funding

Like many other states, Tennessee employs an appropriations formula for public higher education that derives major cost projections from a credit hour matrix by level and field of study. Formula guidelines are also provided for general administration, maintenance, and operation of physical plant, student services, and libraries.

The Performance Funding Project is an attempt on the part of the Tennessee Higher Education Commission, a statewide coordinating agency, to improve the current appropriations formula in Tennessee. Underwritten by grants from the Fund for the Improvement of Postsecondary Education, the Kellogg Foundation, and the Ford Foundation, the project represents a response to criticisms of the current formula and an opportunity for higher education to demonstrate publicly the effectiveness of instructional performance.

The major purpose of the project is to explore the feasibility of allocating some portion of state funds on a performance criterion, as compared to allocating funds solely on an enrollment criterion. The project assumes funding will continue to be primarily on an enrollment basis but that a complementary feature might be built into the formula to promote institutional diversity and improved instructional performance.

Any alteration in funding policy must meet certain boundary conditions. Changes to the current allocation formula designed to promote effective performance must accomplish the following:

1. They must be politically acceptable (i.e., easily understood and accepted by legislators and members of state government).

2. They must be professionally acceptable (i.e., striking the right balance between the need for institutional autonomy and the need for state-level review).

3. They must encourage institutions to exercise initiative in developing performance measures on which they might eventually be funded.

4. They must recognize differences in institutional role and environment and promote diversity.

The Performance Funding Project is completing its third year. The first two years were spent involving national and state-level higher education authorities in clarifying the conceptual base of the project, identifying related efforts underway around the country, outlining procedures for executing the project, and obtaining the necessary support for pilot projects.

The third year has been devoted to pilot project activity. We decided early in the project to involve as many campus individuals as possible in thinking about altering funding policy to include performance as well as enrollment criteria. One reason for this decision was a belief that those individuals potentially affected by such a policy ought to have an opportunity to help shape that policy. A second reason was the belief that having as many individuals as possible working on such a complex policy issue would be advantageous.

In the spring of 1976, Tennessee public colleges and universities were invited to submit preliminary proposals for pilot projects that would ultimately result in a model for allocating some portion of state funds to their institutions on the basis of performance. As a result of these proposals, eleven public colleges and universities—two research universities, six regional universities, and three community colleges—were selected to develop pilot projects. Pilot projects extend over two years—calling in the first year for the development of institution-wide instructional goals and associated indicators of performance and in the second year for the acquisition of data on these performance indicators and the exploration of funding policies that might promote and reward effective performance.

Pilot projects vary in their approach, emphasis, level of sophistication and background of project director, but they share a common set of expected outcomes. At the end of this first project year, each participating institution has been contracted with to produce (a) a set of institution-wide instructional goals, (b) a set of corresponding performance indicators, and (c) a report on how those goals and indicators were achieved. Some projects are using the *Institutional Goals Inventory* to reach consensus on institution-wide instructional goals. Others are employing elaborate committee structures to arrive at instructional goal statements. Still others are using existing institutional goal statements as a vehicle for reaching consensus. The primary basis of some projects is in the faculties of the arts and sciences. Other projects primarily reside in professional schools. Two pilot projects represent attempts by professional schools to develop performance funding models that could be replicated throughout their respective institutions.

Pilot project directors share a common set of expectations, and they join the project staff in sharing a common set of challenges. Any effort that explores the possibility of linking two difficult problems—funding policy for public higher education and assessment of instructional performance—demands great care and humility. The project rests on a number of debatable assumptions:

1. A complement to the current allocation formula could result in improved instructional performance (i.e., that the behavior of a public sector agency can be affected by economic reinforcement).
2. Instructional effectiveness can be measured in terms of student outcomes.
3. Some instructional outcomes can be quantitatively described.
4. Acceptable measures of institution-wide instructional performance can be developed or identified and agreed upon by both institutions and a state-level agency.
5. In a society with diffused aims, an institution can reach consensus on its fundamental purposes and make them explicit.
6. Institutions fare better when their purposes are explicit.
7. Rewarding a public sector agency for effective performance would be acceptable public policy.
8. Performance funding should reward achievement rather than process.
9. Performance funding should be for demonstrated performance, not proposed or promised performance.
10. Current allocation formulae impede institutional diversity.

After some time, debating these assumptions became counterproductive. The formula was not being improved, and legislators were continuing to ask hard, unanswered questions about the effectiveness of higher education. Progress in improving the formula or assessing the performance of higher education seemed unlikely to emerge from a rehearsal of the difficulties associated with such efforts. As a result, we proceeded with pilot project activity, assuming it was better to act on a set of imperfect assumptions than to wait until there was agreement upon a perfect set of assumptions.

Lessons Learned

During the first year of pilot project activity, a number of lessons were learned while exploring the feasibility of funding institutions on the basis of performance.

Lesson 1. Performance funding is a difficult concept to communicate. It has been misinterpreted in a variety of ways (e.g., funding of innovative approaches to instruction, funding for special institutional activities).

Lesson 2. The possibility of statewide indicators of institutional performance is an anathema to campus personnel. Early in the project there was discussion of the possibility of developing a set of statewide indicators against which all institutions could be assessed. One campus administrator pointed out, though, that statewide indicators of performance would "average out" institutional identity, just as the current formula supposedly does, since every institution would be assessed by a common standard.

Lesson 3. While campuses are reluctant to consider statewide performance indicators, they remain almost equally suspicious of campus-based indicators. This suspicion grows partly out of a concern that campus-developed indicators will not be equally rigorous. One faculty committee working on the Performance Funding Project asked why it should develop rigorous instructional goals when another institution might select a straw-man approach to goal setting and be rewarded more for less achievement. Suspicion also grows out of a concern that one department or college be singled out as solely responsible for certain instructional goals or outcomes (e.g., English department for communication competencies, philosophy department for critical thinking competencies).

Lesson 4. Faculty and administrators are concerned about the unintended outcomes of a funding policy that would include performance criteria. The possibility of punitive funding (i.e., because of poor performance, receiving less than one would on an enrollment basis) is a concern that continues to be expressed.

Lesson 5. Getting faculty to think in terms of institution-wide goals and indicators is difficult. Individuals speak with ease about departmental goals and indicators, but arriving at goals and indicators that cut across departmental lines is another matter.

Lesson 6. Our desire for institution-wide instructional performance measures currently exceeds the technical capability of the assessment community. However, several developmental efforts by the American College Testing Program and the Educational Testing Service look promising.

Promising Findings

Coupled with some difficult and sometimes painful lessons learned during the past year have been some promising and encouraging findings.

1. A great deal can be accomplished for relatively few dollars. For less than one hundred and fifty thousand dollars, eleven institutions have undertaken a serious look at their instructional goals and effects on students.

2. Faculties across Tennessee are very concerned about instructional performance. They sense that funding solely in terms of number of students served has caused people to prostitute academic standards.

3. Addressing the question of what constitutes effective instructional performance has led to a serious consideration of what constitutes minimum competence for a college degree. This became the focal point of a statewide forum, sponsored by the Ford Foundation, on minimal, essential skills and understandings that all college students ought to possess. At two institutions the development of instructional goals and associated indicators is centering on assuring certain minimal instructional outcomes.

4. While some common goals and indicators are emerging from pilot project activity, sets of goals and indicators seem to be taking on a unique character at each institution.

5. The Performance Funding Project is causing hundreds of faculty members and administrators to take a serious look at the effect they are having on students.

6. A number of solutions have been found to questions that plagued the project in its initial stages. For instance, how can you have equal rigor in the assessment of achievement of goals when goals and performance indicators differ from campus to campus? One possibility would be to have a board of visitors provide an assessment of each institution's performance against its set of individually developed instructional goals. The assessment could, in turn, be translated into a factor to be used in allocating some small portion of the state allocation.[1]

Hopes for Next Year

Completing the first year of pilot project activity means each participating institution will have a set of instructional goals and a means of assessing performance on those goals. The second year, which involves gathering performance data and suggesting a means for incorporating performance measures into the current formula, presents an even greater challenge. We remain undaunted, however, in our optimism about what the project may achieve.

Questions continue to haunt us. Pointing out problems is far easier than finding solutions. We continue, though, on the conviction that, at worst, we have brought people together across Tennessee to grapple with the issue of instructional effectiveness, and, at best, we may have come across a policy for funding a public sector agency on some basis other than an analysis of activity.

Footnotes

[1] A number of hypothetical possibilities for funding on a performance basis are outlined in *Case Studies in Performance Funding*, available upon request from the Tennessee Higher Education Commission.

CALCULATING THE ECONOMIC MULTIPLIER FOR LOCAL UNIVERSITY SPENDING

Charles D. Salley
Georgia State University

Economic impact studies have become a popular vehicle to promote the positive attributes of nonprofit institutions for the local area. Over the past few years, institutional researchers have prepared a series of such studies calling attention to the extra dividend of jobs and income that a university provides its local community incidental to its primary educational and cultural contribution.

Successive studies resolved numerous conceptual problems dealing with the ways university spending initially enters the local income stream. However, estimations of university-related direct spending do not complete the picture of the influence on local economic activity. Because of the interdependence of a high consumption, mass-production economy, every dollar of final goods purchased provides a flow of income to the entire chain of activity that provides these goods. Since direct purchases induce additional rounds of spending, the university's total economic impact is some multiple of university-related initial spending.

Institutional researchers have usually presented this conceptual basis of the community multiplier, but they have rarely presented an actual calculation of the multiplier value subsequently used. Instead, the value is usually taken from some more general study of trade areas of similar size. This lack of precision in estimating the multiplier value often compromises the considerable effort expended to measure accurately the amount of direct university-related spending.

The present study is a model for institutional researchers that illustrates specific means not only to conduct sample surveys of faculty and student spending but, also, to calculate a multiplier value of induced spending for the specific community where the university is located.

The model uses local value-added figures calculated from spending survey results and from readily available county census data. Formulas are translated into a stepwise calculation procedure that enables the researcher to arrive at a reliable economic impact estimate without spending many weeks reviewing the regional science literature. The multiplier calculation avoids both the massive data requirements of input-output models and the oversimplified structure of aggregate location quotient models.

As a working example, the study estimates the spending impact of a large public urban university on its metropolitan area.

Previous Impact Studies

Economic impact studies of colleges and universities first appeared in the mid-1960s. Table 1 summarizes the contributions of thirteen representative studies published from 1964 to 1976.

From the initial study forward, all have regarded the university as an export sector of the local economy. This is because most of a university's income and most of its students' income originates outside the community. To the extent that these funds from nonlocal sources are spent locally, the university provides community income very much like a local factory exporting manufactured goods to other areas. The university sells educational and research services to outsiders, although consumption takes place locally. Thus the university exports educational services in the same sense as a Florida resort exports services to winter vistors.

All of the studies estimate the demand for goods and services in the community resulting directly from expenditures by the university and its faculty and students. The Husson College Study (Vizard, 1967), though, was the first to use economic analysis to measure the secondary spending induced by the university's initial direct spending. The concept introduced was economic base theory and the local multiplier.

The underlying idea of economic base theory is regional specialization. The division of labor, and a corresponding degree of specialization, is a prominent characteristic of advanced economies. Great increases in productivity result when participants in the economy concentrate their productive energies in specialized activities where they have natural or trained abilities.

Similarly, geographic areas often contribute to increased productivity through specialization. The specialization may result from some indigenous talent of the local population or from a local endowment of natural resources such as soil or minerals. Specialization may also be the result of a location that has particular relevance to a market area or that serves as a transportation center or transfer point, say from water to rail or other land transportation.

An area's economic base consists of these specialized activities that produce for a demand that exceeds local consumption, that is, activities that involve sales to firms located elsewhere (North, 1955; Tiebout, 1962). Such activities produce an inflow of money income from nonlocal sources. A portion of the nonlocal income then makes its way as wages and purchases into local trade and service activity.

The University of Florida study (Cook, 1970) pointed out that an initial difficulty with the export-base concept lies in properly classifying basic (export) and service industries. The study examined the argument that the number of university employees attributed to the base sector should be limited to the ratio of funds from nonlocal sources to total university funds. For instance, if only eighty percent of the university's funds come from nonlocal sources, only eighty percent of the university's employment should be considered basic. Conversely, the study pointed out, if local expenditures for education would be spent elsewhere in the absence of the university, then local educational services represent a decrease in the community's imports (import substitution). Thus, all local university spending and employment may be classified as basic.

The Idaho State University study (Kelly & Peterson, 1971) raised the question of correct sample design for the surveys needed to estimate the funds students and faculty spend locally. Whereas their study estimated the level of student spending by surveying class sections selected randomly, previous studies had drawn a random sample of individual students. Wilson and Raymond (1973) suggests that a proportional, stratified sample produces a less biased estimate of the population's spending than other methods. Table 2 illustrates this method used to estimate local faculty/staff spending from survey results.[1] The

Table 1

Summary Characteristics of Previous Impact Studies

Institution and year	Major contribution	Major shortcoming	Use of a multiplier
University of Bridgeport (1964)	Recognizes the "export" nature of college services	Considers only direct expenditures of university	No
Northern Michigan (1965)	Disaggregates university spending by types of goods	Considers only direct expenditures of university	No
Husson College (1967)	Makes first use of multiplier to estimate induced spending	Derivation of multiplier is not specific	Yes (2.0)
University of Colorado (1968)	Considers input/output analysis but rejects it as too costly	Ignores induced effects of student spending	Yes (1.37)
University of Connecticut (1969)	Recognizes cyclical stability of university employment	Includes no report of survey results	No
University of Florida (1970)	Justifies all university employment as basic	Basic employee equivalents of student spending are biased upward	Yes (1.4)
Wisconsin State University (1970)	Estimates future impact based on enrollment projections	Derivation of multiplier is not specific	Yes (2.0–2.3)
University of Alabama (1971)	Illustrates upward bias of aggregate employment multipliers	Produces unusually high multiplier resulting from aggregate approach	Yes (4.35)
Idaho State University (1971)	Makes first attempt to disaggregate student spending	Sample design leads to considerable bias	No
Eastern Kentucky University (1971)	Makes first use of student spending diaries	Derivation of multiplier is not specific	Yes (1.75)
University of Pittsburgh (1972)	Uses comprehensive data collection	There is no independent estimate of multiplier	Yes (2.0)
Kent State University (1973)	Uses specific calculation of university sector multiplier	Assumes university multiplier and service sector multiplier are same	Yes (1.09)
Georgia State University (1976)	Uses specific calculation of alternative multiplier models	Does not consider negative tax impact or positive human capital impact	Yes (1.22–1.78)

Table 2

Estimation of Local Faculty/Staff Spending
Stratified Random Sample

	Percent distribution			
	Full-time faculty	Part-time faculty	Full-time staff	Part-time staff
Population (3305)	23.9	8.2	33.3	34.5
Sample (1108)	38.8	6.5	38.8	15.9

Spending category	Sample annual average	Weighted annual average[a]
Housing	$2523.00	$2280.96
Utilities	717.36	627.96
Food and houshold	1794.12	1576.68
Eating out	555.36	513.72
Entertainment	307.80	288.24
Automobile	1205.04	1052.64
Other transportation	75.00	75.48
Clothing	501.84	391.80
Personal service	280.32	244.56
Health services	524.64	429.96
Furniture	318.36	246.24
Other	801.84	690.96
Total	$9604.68	$8419.20

[a] Weighting factors are the ratios of faculty/staff population in each stratification to the population total, i.e., 23.9% for full-time faculty, 8.2% for part-time faculty, etc.

same procedure is used to estimate local spending by the student population.

Multiplier Estimation of Induced Spending

The studies which calculated a multiplier value approached the problem in a conceptually identical manner (Billings, 1969) while seeking increasingly accurate methods of calculation. The simplest model drawn from this literature views the amount of induced spending as proportionate to the ratio of base sector employment (or spending) to total employment (or spending). This aggregate location quotient multiplier is easily calculated, but it has the drawback of using a single multiplier for all sectors of the local economy. However, individual sectors of the local economy may well have different proportions of local/nonlocal spending. If this is the case, each sector would then have a different income and employment effect on the local economy.

The assumption that all sectors have the same proportion of local spending can lead to great overstatement of economic impact, especially in rapidly growing areas where the base sectors are shifting. Using this method, some studies calculated multiplier values as high as 4.35.

To overcome this drawback, the Kent State study (Wilson & Raymond, 1973) suggested computing a multiplier specifically for the university portion of the export base. The multiplier is computed from the local value-added of various sectors in proportion to university spending in each of these sectors. However, even though this model more accurately computes the initial local spending impact peculiar to the university, it suffers the drawback that subsequent respending by all local consumers is presumed to have the same pattern as the university.

A third type of model, a differential value-added multiplier (Bresler, 1974), is a refinement of the Kent State model. As the name indicates, two different multipliers come into play—an initial local spending ratio unique for university patterns and a second ratio for subsequent rounds of local respending by consumers.

The limiting case of this type of disaggregation is the input-output model which uses separate spending ratios for every sector of the local economy. The Bresler model represents a happy medium by recognizing that, while the initial spending impact of a university may differ substantially from the initial impact of, say, an automobile assembly plant, the induced respending by various local consumers may be more similar and, thus, more reliably aggregated.

The model first estimates the initial university-related spending ratio based on the pattern of local university purchases. As Table 3 shows, the local value-added figures used in the computation are calculated from steadily available local payroll/sales data. The second ratio, local respending by consumers, is simply the value-added (payroll/sales) by local trade purchases.

This approach takes account of the university's unique initial spending pattern while avoiding the immense data requirements of a full input-output model that has separate local spending ratios for every sector. Table 4 shows how to compute the final multiplier value as a combination of the local value added by inital university-related spending and the local value-added by induced consumer respending.

Conducting the Impact Study

The estimation of the university's economic impact proceeds in five distinct phases:

1. Collection of university enrollment, payroll, and purchasing data
2. Survey and estimation of student spending
3. Survey and estimation of faculty/staff spending
4. Calculation of the local multipler
5. Computation of the university's total impact on local income.[2]

In the study of Georgia State University's impact on the Atlanta area economy, the Business Office provided state funds expenditure data for the fiscal year 1976. The purchasing data which was initially classified by university expense code was regrouped to correspond to the Standard Industrial Classification (SIC) used by the Department of Commerce. This was necessary because virtually all Department of Commerce local payroll/sales (value-added) ratios are published only for the SIC code industry groups.

The Business Office also provided gross and net payroll figures for the fiscal year for full- and part-time employees. The number of employees by category and the number of students by category came from the Office of Institutional Planning.

Next, the Office of Institutional Planning conducted questionnaire surveys of student spending patterns and of faculty/staff

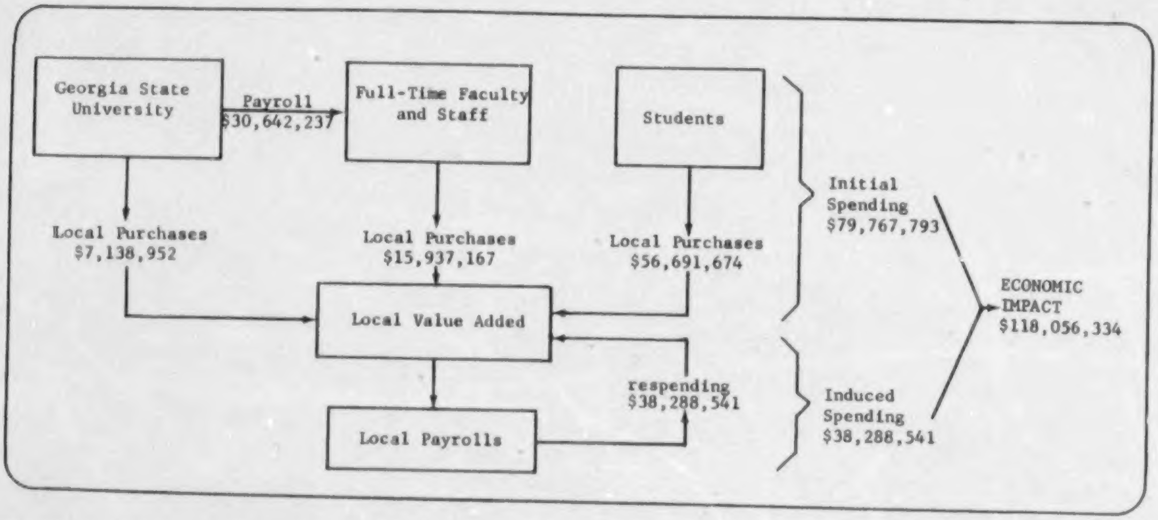


Figure 1. Atlanta spending patterns (1976).

Table 3

Calculation of Initial Impact by University Purchases Using Local Value-Added Ratios[a]

Item	Amount of local purchase	Industry SIC code	Value-added ratio[b]	Value-added amount (2) × (4)
Employee travel and benefits	$ 320,977	7000	.322	$ 103,355
Taxes and utilities	1,506,241	—	.397[c]	$ 597,978
Trade purchases (wholesale and retail)	3,198,829	5000	.133	$ 425,444
Finance and insurance	44,081	7300	.366	16,134
Rental	750,617	—	.219[c]	164,385
Repair services	611,436	7600	.372	227,454
Business services	668,156	7300	.366	244,545
Vehicle repair and service	20,516	7500	.219	4,493
Other	18,119	5000	.133	2,410
Total	$7,138,952			$1,786,198

[a] Adapted from S.R. Bresler, Multiplier for a Public Program, unpublished dissertation, Georgia State University, 1974, pp. 35–37.

[b] Atlanta sales-payroll ratios are calculated from data presented in *Census of Business*, U.S. Department of Commerce 1967, *5*, (1), Table 4.

[c] J. Wilson, Economic Impact of a University on the Local Economy, unpublished dissertation, Kent State University, pp. 148 and 153.

Table 4

Computation of a Differential Expenditure Multiplier Using Local Value-Added[a]

$$m = 1 + \frac{r}{1-s} \quad \text{where } r = \text{initial spending}, \quad s = \text{re-spending ratio}$$

A. Computation of r, the proportion of total Georgia State University spending that is spent locally.
1. Local consumption by full-time employees (survey) $15,937,167.
2. Gross payroll to full-time local employees $30,642,237.
3. Portion of payroll spent locally (1) ÷ (2) = .520. (proxy for all local payroll spending)
4. Value added by university's local purchases (Table 3) $1,786,198.
5. Initial local income generated by purchases (3) × (4) = $928,823.
6. Total initial local spending (1) + (5) = $16,865,990.
7. Total university spending (all purchases + 2) $37,781,189.
8. Ratio of local spending to initial total spending (6) ÷ (7) = .446.

B. Computation of s, secondary local spending induced by initial local spending.
9. Local value added by total local spending (6) × (.133[b]) = $2,243,177.
10. Induced local spending (9) × (3) = $1,166,452.
11. Ratio of induced local spending to initial local spending (10) ÷ (6) = .069.

C. Computation of multiplier.
12. 1.000 − (11) = .931.
13. (8) ÷ (12) = .479.
14. 1.000 + (13) = 1.479.

---

[a] Adapted from S.R. Bresler, Multiplier for a Public Program, unpublished dissertation, Georgia State University, 1974, pp. 33–46.

[b] Trade purchases value added, Table 3, col. (4).

spending patterns. A random sample of the student body produced 1,210 complete responses and a 100 percent faculty/staff survey produced 1,108 complete responses. Population estimates were then calculated from these results using the stratified sample method illustrated in Table 2.

The local multiplier value was then calculated. The calculation proceeds in three steps: (a) the payroll/sales ratios used as proxies for local value-added is calculated from census data, (b) the inital impact of local university purchases is calculated using the value-added figures obtained in the first step (Table 3), and (c) the actual multiplier value can then be calculated using the local purchase impact figure from the second step, the gross payroll figures obtained from the Business Office, and the results of the faculty/staff spending survey. The exact calculation using Georgia State University data is presented in Table 4. The calculated multiplier value for Atlanta is 1.48. This value is within the 1.20 to 1.50 range that the American Council on Education recommends for university economic impact studies (Caffrey & Isaacs, 1971).

Finally, the total impact of the university's spending on local income was computed using the calculated local multiplier value. As seen in Figure 1, the university's initial spending impact comes from three sources: local purchases by the university, local faculty/staff spending of the university payroll, and local spending by students whose activity in Atlanta is directly attributable to their enrollment at Georgia State University.

Local purchases by the university during fiscal 1976 totaled $7,138,952. This amount is virtually the total of all purchases since the university is located in the regional wholesale supply center and very few purchases are made outside the area. Purely nonlocal initial purchases are limited to periodical subscriptions and some travel expenses. All local orders, of course, do not produce additional local income if the actual materials are manufactured elsewhere. The local value-added ratios correct for this income leakage.

Annual local spending by faculty and staff members was estimated to be an average of $8,419. Total local spending by 1,893 full-time employees is, then, $15,937,167. There are an additional 1,412 part-time employees. Although their spending patterns are similar to full-time employees, their local purchases cannot be attributed entirely to the university since payroll records indicate that only $1,025,208 was paid out to part-time personnel. Most of their income, apparently, derives from other sources.

The third source of initial impact is student spending. Annual local spending by students was estimated to be $6,455.44 on average. Since many students are professionally employed in Atlanta and are incidentally enrolled in Georgia State University on a part-time basis, all student spending is not directly attributable to the university. Questionnaire responses, though, indicated that 46 percent of the student body lives in the Atlanta area largely because of enrollment in Georgia State University. Either students have moved to the area to attend this school, or they would have moved elsewhere to attend school if Georgia State University were not located in the Atlanta area. A total of 8,782 students fall in this category. Their spending is $56,691,674.

Initial university-related spending from these three sources totals $79,767,793. The figure is conservative because it omits spending by part-time employees and most part-time students. To obtain the total local expenditure figure, the amount of initial expenditure is increased by the local multiplier:

$79,767,793 × (1.48) = $118,056,334.

Conclusion

During the 1960s and early 1970s, economic impact studies became the vehicle to promote the positive attributes of nonprofit institutions for their local areas. Postsecondary educational institutions were prominent among these. A series of studies appeared calling attention to the substantial dividend of jobs and income the university provides its local community in the course of pursuing its primary educational and cultural aims.

Succeeding studies resolved conceptual problems dealing with the manner in which university-related spending enters the local income stream. Three channels were identified: direct university purchases, the university payroll, and, peculiar to the case of educational institutions, spending by the student body. The series of studies also resolved problems related to accurate estimation of the extent that faculty and staff spend payroll funds locally and the amount students spend locally.

Developing accurate methods to estimate these channels of direct university-related spending did not complete the picture, however. These initial purchases induce additional rounds of local spending. Consequently, the university's total economic influence is some multiple of the level of direct spending.

Most of the studies reviewed in this paper approached the problem of multiplier estimation in a conceptually identical manner although each sought to achieve an increasingly accurate method of calculation. All employed the concept of the community economic base whose initial income induces several rounds of additional local spending. This study illustrates the use of differential value-added multiplier model to estimate the economic impact of a large public urban university on its metropolitan area. The model incorporates an initial local spending ratio unique for university patterns and a second local spending ratio for subsequent rounds of respending. Using this model to compute the actual multiplier value will help the institutional researcher avoid both the oversimplified structure of aggregate location quotient models and the massive data requirements of a fully disaggregated input-output model.

Footnotes

[1] Copies of the survey questionnaires and the student spending estimate may be obtained from the author.

[2] Computation of the impact on local employment using employee equivalents of student spending is included in a more comprehensive paper available from the author.

References

Acker, R. The economic impact of expenditures by out-of-state students at a regional state university. *Institutional Research and Institutional Policy Formulation.* Tallahassee, FL: Association for Institutional Research, 1971, pp. 128–133.

ECONOMIC MULTIPLIER

Bellenger, D. The income and employment impact of the University of Alabama on Tuscaloosa County. *Alabama Business*, 1971, *10*, 1–6.

Billings, R. The mathematical identity of the multiplers derived from the economic base model and the input-output model. *Journal of Regional Science*, 1969, *9*, 471–473.

Bonner, E. The economic impact of a university on its local community. *Journal of the American Institute of Planners*, 1968, *5*, 339–343.

Bresler, S. *Multiplier for a public program*. Unpublished dissertation, Georgia State University, 1974.

Caffrey, J. & Isaacs, H. *Estimating the impact of a college or university on the local economy*. Washington, D.C.: American Council on Education, 1971.

Cook, E. Analyzing university student contribution to the economic base of the community. *Annals of Regional Science*, 1970, *4*, 146–153.

Hirsch, W. *Urban economic analysis*. New York: McGraw-Hill, 1973.

Johnson, J. *The economic impact of a state university on its community*. Unpublished dissertation, University of Missouri, 1970.

Kelly, J. & Peterson, R. How much money do students spend in a college town? *College Management*, 1971, *6*, 26–27.

Kim, S. *Multiplier theories and their applications to regional science*. Unpublished dissertation, University of Pennsylvania, 1966.

Kranshaar, J. How much of an asset is a college? *College and University Business*, 1964, *2*, 43–45.

Messner, S. *Market analysis for the single industry community: An illustrative study of a university town*. Storrs: University of Connecticut, 1969.

North, D. Location theory and regional economic growth. *Journal of Political Economy*, 1955, *63*, 243–258.

Salley, C. Prather, J. & Williams, J. *A review of economic multipliers for post-secondary institutions with selected models applied to Georgia State University*. Atlanta: Office of Institutional Planning, Georgia State University, 1976.

Stordahl, K. & Pappas, C. *Contribution of Northern Michigan University to the economy of the Marquette area*. Marquette: Office of Institutional Research, Northern Michigan University, 1966.

Tiebout, C. *The community economic base study*. New York: Committee for Economic Development, 1962.

University-Urban Interface Program. *The impact of the University of Pittsburgh on the local economy*. Pennsylvania: University of Pittsburgh, 1972.

Vizard, R. *The economic impact of Husson College on Bangor, Maine*. Unpublished master's thesis, University of Maine, 1967.

Weiss, S. & Gooding, E. *Estimation of differential employment multipliers in a small regional economy*. Massachusetts: Federal Reserve Bank of Boston, 1966.

Wilson, J. & Raymond, R. Economic impact of a university on the local community. *Annals of Regional Science*, 1973, *7*, 130–142.

THE LUST FOR EFFICIENCY: A DOWNHOME STORY OF THE IMPLICATIONS OF ZERO-BASED BUDGETING

Cameron Fincher
University of Georgia

To judge from its publicity, zero-based budgeting has become as much a part of Washington news coverage as human rights and the energy crisis. The *Wall Street Journal* reports that, in late January, Peter Pyhrr's book on zero-based budgeting reached the *Washington Post's* list of non-fiction best sellers. The concept has been much covered in popular periodicals, such as *Business Week*, and has been the subject for hearings before the Task Force on Budget Process of the U.S. House Committee on the Budget. The subject has even dented the provinciality of the *Atlanta Constitution*.

The popularity of a relatively new, but obscure, budgeting procedure is attributed to the election of Jimmy Carter, the former governor of Georgia, and his stated intention to apply zero-based budgeting across the board in federal agencies. As much as many proponents of zero-based budgeting would contend it is merely common sense, it is nonetheless an elaborate process in budgetary justification. Yet, according to the *Wall Street Journal* (Large, 1977) zero-based budgeting is used by many major companies and multinational corporations. Testimonials are freely given to the advantages accruing from the application of zero-based budgeting, and no less an authority than Arthur Burns, chairman of the Federal Reserve Board, indicated some years ago that the adoption of zero-based budgeting could be a significant factor in the control of governmental expenditures.

The arrival of zero-based budgeting is dated from Peter Pyhrr's article in *Harvard Business Review* (1970) and from its adoption by Jimmy Carter who had just then been elected governor of Georgia.

The purpose of this paper is to discuss the reactions to zero-based budgeting in the state of Georgia as it pertains to institutions of higher education. Few assumptions will be made about the success or failure of zero-based budgeting in corporate industry or in federal government. Some skepticism might be expressed, however, about the appropriateness and implications of zero-based budgeting for colleges and universities.

The Georgia Experience in State Government

The experience of state agencies in Georgia with zero-based budgeting has been examined by George Minmier and Roger Hermanson (1976). They report data collected in a survey questionnaire sent to 39 budget analysts who were involved in zero-based budgeting. The study also included follow-up interviews with selected departmental budget analysts and with selected department heads (as well as with former governor Jimmy Carter).

Although these investigators found a generally favorable attitude toward zero-based budgeting, there are several findings that require interpretation. For example, the majority of budget analysts believe the quality of management information gathered under zero-based budgeting has improved slightly or substantially, but they do not believe zero-based budgeting has resulted in a significant reallocation of the state's financial resources.

A majority reported that zero-based budgeting increased considerably the time and effort spent in budget preparations its first year. After implementation, zero-based budgeting required much greater, or slightly more, time than the previous incremental budgeting system. Respondents are in less agreement about the amount of involvement zero-based budgeting required of the agency head and its first line supervisors. Although agency heads tend to be more involved with zero-based budgeting, first line supervisors are clearly more involved than they were in the previous incremental system.

As would be expected, perhaps, the majority of respondents in the survey did not feel that the budget bureau had done adequate advanced planning for implementing zero-based budgeting, nor that adequate cost data had been available to the respondents to enable them to prepare decision packages properly. They did feel, however, that they had received adequate instructions during the first year of zero-based budgeting, that they now had the information needed, and that adequate cost data to prepare a decision package were now available.

Minmier and Hermanson note three primary advantages to the implementation of zero-based budgeting in Georgia: (1) the establishment of a planning phase prior to the budgeting phase itself, (2) an improvement in the quality of resultant management information, and (3) an increase in the involvement of personnel at the activity level in the state's budgeting process. Minmier and Hermanson conclude that the major disadvantage associated with zero-based budgeting is the increased time and effort required for budget preparation. On balance, zero-based budgeting has served the best interest of Georgia, and the budget analysts in this survey evidently believe it should be continued. Only five budget analysts recommended its discontinuance.

The University System of Georgia

For fiscal year 1973, the institutions of the University System of Georgia were asked to prepare a preliminary zero-based budget for all activities except primary resident instruction, research, and public service. Selected units under resident instruction were at first included in the requirement but later exempted. As a result, only the Agricultural Experiment Station, the Cooperative Extension Service, and the Marine Resources Extension Center now prepare a preliminary budget request using zero-based budgeting methods. Although these units prepare preliminary zero-based budgets, they actually prepare operating budgets and maintain all accounts by conventional budgetary methods. There is no planning, no preparation, nor any other remaining application of the zero-based concept in any resident instruction unit. There is good reason to believe, therefore, that zero-based budgeting has not been utilized in a higher education setting in the state of Georgia (Barber, 1977).

Yet, the requirement of zero-based budgeting in the preliminary budget requests for fiscal year 1973 created considerable activity within the University of Georgia. A flow chart of the university's budget was prepared, evidently for the first time, and with much other data gathered, there was a resultant appreciation of the university's 300-plus budgetary units, which had not been possible previously. This appreciation may be the most significant outcome of the experience to date.

Budget heads on the University of Georgia campus who were involved in the process report varying opinions and beliefs concerning the efficiency of zero-based budgeting. At least one experienced budget head believes the method gave him better grounds on which to discuss his functions and activities with superiors. To no little extent, he thought the approach gave him "a manipulative advantage" over his superiors rather than the other way around. The continued use of zero-based budgeting in preliminary requests for the Agricultural Experiment Station and the Cooperative Extension Service is not seen as helpful, however, because of the diverse funding sources. State, federal, and university system requirements must be met, each imposing its own burden of paperwork.

Basic Assumptions and Implications

If zero-based budgeting gives a sense of deja vu, it is because of higher education's experience with PERT, PPBS, and MBO. The patterns of these three managerial techniques and zero-based budgeting have many similarities. Each technique has roots in corporate industry, transferred experience in public administration, and then a period of advocacy for institutions of higher or postsecondary education. In each case, the transfer of technique, first to government and then to higher education, came with something bordering on religious fervor.

Even a quick skimming of Peter Pyhrr's book or his article in *Harvard Business Review* will trigger a cynical humming of, "It seems to me I've heard that song before." The technique begins with "promises, promises" and leads quickly to linear arrangements in charted passages through operational mazes. As in most managerial techniques, there is the belief that corporate industry, government, and education are isomorphic in their demands for, and their amenability to, managerial effectiveness. There is an explicit faith that techniques developed in one organizational setting can be transferred without extensive modification to other organizations and institutions. Pyhrr hedges only slightly in referring to philosophy and procedures that are "almost identical."

The basic premise of zero-based budgeting is that programs, functions, and activities themselves, not annual increments in agency or unit budgets, should be justified. The process makes a distinction between planning and budgeting but is not explicit about the nature and details of planning that must clearly precede the budgeting process. The development of a zero-based budget assumes that work can be broken out into functional units that can be reassembled as a system of interlinking parts. An implicit interaction of goals, operations, and organizational capabilities is recognized.

There are six basic assumptions underlying zero-based budgeting that may be identified: (1) it will permit an analysis of purposes, costs, and benefits, (2) alternative courses of action can be specified, (3) the consequences of those alternatives can be identified and assessed, (4) the process will improve the effectiveness of resource utilization, (5) the involvement of managerial personnel at operational levels will eventually reduce the budgeting process, and (6) successful application of the technique will result in better decision making, as well as suggestions for innovation.

Such assumptions are not unknown in PERT, PPBS, and MBO, and there is temptation to conclude that zero-based budgeting is but another rational, management tool that offers a systematic way of examining ongoing programs and activities that is normally exercised only for new or expanded programs. Such advantages as zero-based budgeting might have for higher education would appear to be the rudeness with which it breaks into daily routine and requires a critical look at functions and activities long taken for granted. Also, a decided advantage might accrue from the emphasis zero-based budgeting ostensibly places on lower-level decision making in the budgetary process. There are always academic department heads who would welcome a more direct input to the budget process and better control over budgetary expenditures.

In Pyhrr's opinion, zero-based budgeting is effective because it focuses on the actual dollars required for successful operation and not on percent increase or decrease in the agency budget as such. How well this would permit institutions of higher education to identify and compare priorities both within and among departments or divisions of instruction remains to be seen. Program budgeting did not succeed in this respect, and it is well to recall that zero-based budgeting has specifically excluded direct production and manufacturing costs from the process. Zero-based budgeting is applicable, according to Pyhrr, only to the administrative, technical, or nonproductive portions of the corporate budget. For a labor-intensive industry, such as higher education, where the major production units are academic departments, the technique could involve some jarring implications.

The Product is the Process

The most audacious assumption of zero-based budgeting, however, is its requirement that the goals and objectives of an organizational unit should determine its budget—and not the converse.

Many of us wish this were true in higher education. Unfortunately, organizational goals, being more implied than explicit, are determined to a greater extent by the funds that are available (or by the prospects of additional funding) than by clear-cut choices that are made prior to the availability of funds.

There is no evidence that zero-based budgeting results in more clearly established goals or that it provides better measures of performance or progress toward the fulfillment of those goals. The budgeting process is still dependent upon an ex post facto form of rationalization thart permits or requires the budget maker to justify expenditures in terms of worthy directions and commitments. While zero-based budgeting may be helpful in eliminating costly add-ons or accessories to essential programs and a needless duplication of costs in fringe or marginal activities, there is little about the process that would suggest that it is a cost-effective technique in its own right. The test might be whether the money it saves is worth the money it costs. Staff time, paper, photocopying, etc. are all costs that are added on the usual cycle of budget-making whatever that usual cycle might be. A process that eliminates expenses for the trivial or incidental but costs unknown amounts in staff time and clerical materials is not cost-effective by virtue of savings alone.

Nor is there anything in zero-based budgeting that prevents trade-offs, compromises, negotiation, treaties, pay-offs, and other forms of political behavior on the part of those making out the budget. Decision packets will still be identified with decision makers, and the logical necessity of certain functions or activities will always be more obvious than others. At the same time, there will always be the uneven administration of the decisions and judgments that must be made to keep the process credible.

In conclusion, there may be little about zero-based budgeting that is novel or unique. And there may be little about it that promises any special advantages or benefits for institutions of higher education. Its only advantage may be the process it requires, and the benefits may be too subtle for widespread adoption in higher education. There is at this time good reason to believe that the virtue or merit of zero-based budgeting lies in process only. No one should expect miracles from the product.

References

Barber, A., vice president for business and finance, University of Georgia. Personal Correspondence, 10 January 1977.

Fogarty, A.B., & Turnbull, A.B. Legislative oversight through a rotating zero-base budget. *State and Local Government Review*, 1977, 9(1), 18–22.

Hill, W.D. *Implementing zero-base budgeting—the real world*. Oxford, Ohio: Planning Executives Institute, 1977.

Large, A.J. Applying zero-base budgeting. *The Wall Street Journal*, May 24, 1977.

Minmier, G.S., & Hermanson, R.H. A look at zero-based budgeting—the Georgia experience. *Atlanta Economic Review*, 1976, 26(4), 5–12.

Pyhrr, P.A. Zero-base budgeting. *Harvard Business Review*, November/December, 1970, pp. 111–121.

Pyhrr, P.A. *Zero-base budgeting: A practical management tool for evaluating expenses*. New York: John Wiley & Sons, 1973.

What it means to build a budget from zero. *Business Week*, 18 April 1977, pp. 160–164.

Zero-base budgeting manual—fiscal year 1973 budget development. State of Georgia Executive Department, 15 March 1971.

STUDENT CHARGES AT TWENTY MAJOR UNIVERSITIES: CAN THE DATA BE COMPARED?[a]

Joe L. Saupe
Russell E. Blagg
University of Missouri

Institutional researchers, at least, know that questions such as What is the enrollment at your college or university? or How many faculty members are there at your college or university? must be answered with care, particularly if indices may be calculated and comparisons among institutions may be made from the data. Too many strange student/faculty ratios have seemed to result from the absence of detailed and observed definitions and misunderstanding of the data for the lesson with regard to student and faculty counts not to have been learned.

The principal purpose of this paper is to demonstrate, using information on tuition, fees, other required charges, and non-required fees at 20 major public universities[1], that the question What is the tuition at your college or university? is at least as troublesome as the questions about numbers of students and faculty. A secondary purpose is to describe a number of characteristics of the student charge systems in use (1975–76) at the subject universities. It is the variation in these characteristics which leads to difficulties in defining student charge terms and in wording student charge questions in manners that result in data that are meaningful, to say nothing of comparable.

Method

Data were collected by means of a three-page survey instrument. The first page contained survey instructions. Form A was used to report required student charges. Multiple versions of Form A were completed to reflect differential charges by program and student level and for regular semesters or quarters and summer sessions. The dollar and cents amount of each separately named required charge for each value of number of credits enrolled for resident and for non-resident students was entered on Form A along with brief names and descriptions of the separately named required charges. This paper addresses only the data for regular semesters and quarters. None of the data on summer session student charges are included. The number of Form A's completed for individual universities ranged from 4 to 18.

Form B was used to provide information on non-required student fees. It was simply a checklist of generically named non-required charges with spaces to indicate amounts and to enter remarks. One Form B was completed for each university.

The Form A on required charges per credit enrolled were graphed in order to reveal the shapes of required charge functions. Many characteristics of required charges were also displayed by university in a summary chart, available from either of the authors upon request. A non-required fees chart summarizing the information provided on Form B's was also prepared.

Findings

The predominant feature of all the information collected, graphed, and charted is diversity. No matter what characteristic of student charges stated by the 20 universities is considered, there is variation among the universities in the manner in which it is stated. The following summaries of specific characteristics of student charge systems substantiate this general finding.

Terminology. Most of the sample universities assess a basic, comprehensive, multipurpose, undesignated-as-to-specific-purpose charge. This is here labeled the "general charge," to distinguish it from "special charges" which are assessed all students, normally in addition to the general charge, and are designated for specific purposes. Only nine of the 20 universities refer to the general charge as tuition. Six of the remaining universities reserve the term tuition for an additional charge assessed non-resident students. Five of the 20 universities evidently make no use of the term tuition in stating student charges.

Many of us think we know what is meant by the term tuition, but what would we expect to learn if we collected data from these 20 universities on the amount of tuition assessed a full-time student for a semester or the equivalent thereof?

Other terms used for the general charge, and the number of the 20 universities using each, are: incidental fee (2), instructional fee (2), instruction fee (1), course fee (1), registration fees (1), general service fee (1), comprehensive fee (1), operating fees (1), and full program fee—combined with enrollment fee for reduced program and reduced program charge per hour (1). Terms used for special charges also vary widely. The term incidental fee is used at one university for a special charge and by two others, as noted, for the general charge.

Knowledgeable persons who collect data on faculty have learned that the term faculty, because it means different things at different places, should be avoided in describing the persons to be included and in defining the data items sought. The lesson here is that the term tuition should be avoided in collecting data on student charges. It may be necessary to admonish the person at one college or university who is seeking student charge data from another college or university not to use local descriptors on the presumption they have the same, or any, meaning elsewhere.

General and special charges. Charges applicable to principal categories of undergraduate resident students were classified as general or special charges, as previously defined. Although the survey instrument did not include specifications for distinguishing between general and special charges, this distinction was obvious in most uses. However, the categorization of the authors may not be completely accurate. Two universities assess no general charges, most have a single general charge, two state two general charges (tuition/comprehensive fee and tuition/operating fees), and one distinguishes among a full program fee, reduced program fee, and a reduced program charge per hour.

---

[a] *Author's Note:* After this paper was presented at the 1977 Forum of the Association for Institutional Research, we discovered we had misinterpreted data provided for Pennsylvania State University (PSU). Specifically: (1) at PSU, students enroll for, and are assessed tuition on the basis of semester credits for, courses offered on a quarter calendar, and we should have used a normal load value of 10 credits, rather than 15, in our calculations; and (2) the per credit charge for credits in excess of 13 which led us to describe the PSU charge function as mid-range plateau was, in fact, a proposal that was not adopted. We have not revised the paper to correct the PSU data but offer this note as additional evidence that it is difficult to assemble comparable data on student charges.

The number of separately stated special charges ranges from none to four or more. The "or more" equivocation results from the fact that a student activity fee, for example, may in fact include a variety of components which consist of amounts designated for different student activity purposes and income accounts. Even the present comprehensive and detailed collection of student charge data does not reveal all details of this type. The names of the array of special charges and the designated purposes, in some cases inferred from the names, vary considerably among the 20 universities.

Amounts of the general and special required charges for resident undergraduate students for the 20 universities may be summarized as shown in Table 1. The dollar amounts stated are charges for an academic year (1975–76) of either two semesters or three quarters for a student enrolled for 15 credits per semester or quarter.

Table 1

General and Special Required Charges
for Resident Undergraduate Students
in 20 Universities

	General charges	Special charges	Total required
High	$1,365	$638	$1,365
Low	0	0	370
Median	545	117	672
Mean	577	154	731

The lesson learned here is that, with respect to the burden on the student and the comparability of data, the distinction between general and special charges should be ignored; only the total of the two types is meaningful. Of course, the distinction is important to individual colleges and universities because of the varying manners in which the rates are established and charged and the differing dispositions of the income. But the person at the university which collects an incidental fee (general charge) and a student activity fee (special charge) should not expect to collect data comparable to the two local charges from other universities.

Non-resident charges. At public universities, the amounts of required charges for non-resident undergraduate students exceed the amounts for resident students. This is well known. However, it may not be well known that this result is achieved in two ways. Six of the 20 universities assess non-resident students tuition in addition to the general and special required charges assessed resident students. This can be called the *add-on procedure*. The remaining 14 universities simply state higher rates for the general charge(s) for non-resident students. This can be called the *rate procedure*.

The person who is familiar with only one procedure—the add-on or the rate—may assume that there is only one way to assess non-residents more than residents and may encounter problems in acquiring comparable data from colleges or universities which use the other procedure. The lesson learned here is that the question should be What is the total required charge for non-resident students? and not What is the special extra required charge for non-resident students? or What is the amount of the general charge for non-resident students?

Total undergraduate non-resident charges and the amounts and percentages by which these exceed the comparable resident required charges for the 20 universities can be summarized as shown below. The dollar amounts are charges for an academic year of either two semesters or three quarters for a student enrolled for 15 credits per semester or quarter.

Table 2

Total Undergraduate Non-Resident Charges
and Increment over Resident Charges at 20 Universities

	Non-Resident Charge	Non-Resident Increment	Percentage Increment
High	$2,871	$1,908	297
Low	1,366	790	98
Median	1,764	1,090	144
Mean	1,897	1,172	. . .

Of interest here is simply the variability and the high positive skewness of the distributions. The high values of these measures are from two to three times the magnitudes of the low values. At one of the 20 universities non-resident undergraduates pay twice as much as residents; at another, they pay four times as much. The modes of the three distributions are very close to the low ends of the distributions. The most popular $200 ranges for the non-resident charge and non-resident increment figures are $1,500 to $1,700 (8 universities) and $800 to $1,000 (7 universities), respectively. The most popular 20-percent point range for the percentage increments is 120% to 140% (6 universities). Data comparers should understand that comparisons with means, medians, and modes from skewed distributions of peer instituion measures yield different conclusions.

Differentiation by level and program. None of the 20 universities employ the same required charge schedule for all resident or non-resident students. Thus, the question What is the total required charge for full-time resident students? has no unequivocal answer no matter how thoroughly the terms of the question are defined. The types of students subject to different required charge schedules can be identified by the level of the student (lower division, upper division, first professional, or graduate) and degree program. Typically, both identifiers are required.

Using the required charges for typical or lower division undergraduate residents or non-residents as a base, differentiation occurs for a variety of levels and programs. One of the 20 universities has differential charges for typical upper division students. Four have differential schedules for individual, or groups of, undergraduate programs. Two of these four have different schedules for one program each, and two have three schedules for different undergraduate or upper division programs in addition to the basic one.

All first professional dentistry and medical programs of the 20 universities have charges which are higher than those for undergraduates. Five of the six universities offering veterinary medicine and 14 of the 18 with law have differentiated (higher) required charges for the first professional students of these programs. The degree of differentiation for resident students in first professional programs varies from charges which are 8% (a law program) to 217% (a medical program) higher than the basic undergraduate required charge.

Thirteen of the 20 universities have differentiated required charges for all graduate students, four have one differentiated schedule for selected graduate programs, and one has two differentiated schedules for selected graduate programs. Only five of the 20 universities charge all graduate students at the same rates as undergraduate students.

In only two instances are the differentiated charges for resident graduate students less than the basic undergraduate rates. At one university, the graduate student rate is 98% of the basic undergraduate rate. At another university, nursing students at all levels are charged just over half as much as all other students.

Not only is there variation in the number of differential required charge schedules and the types of students to which they apply, there is also variation in the manners by which differentiation is achieved. As with the achievement of differentiation for non-resident and resident students, there is an add-on and a rate method. Of 59 sets of differentiated required charges identified for the 20 universities, eight involve an add-on charge, 57 involve different rates for the general and/or special basic required charges, and seven involve a combination of the two. In only one instance, a supplementary fee for first professional medicine and veterinary medicine students, is differentiation achieved solely by an add-on charge. On the basis of their names (instructional materials fees, law fee, testing fee, computer fee, publication fee, and microscope fee), the remaining instances of add-on charges appear to be add-on special charges designated for specific purposes.

Even ignoring the information assembled but not discussed here, on non-resident versus resident required charges in the instances of differentiation from basic undergraduate required charges, it is evident that differentiation by level and program is a varied and complicated matter. The lesson learned again is that comparable data cannot be obtained from simple questions or without some understanding of the complexities involved.

Required charge functions. A required charge function describes the relationship between the number of credits for which a student enrolls and the amount of the required charge assessed. Functions for undergraduate resident, undergraduate non-resident, differential resident, and differential non-resident charges, and for components of each may be examined. Seven types of functions for required undergraduate resident student charges are in use at the 20 universities. They are described, in order of frequency of use, as follows:

With the *per-credit-to-plateau* function, charges are assessed at $\$r$ per credit for 1 to n-1 credits and at $(\$r \times n)$ for n and over credits. The plateau begins at n credits. Eight universities use this type of function for determining undergraduate resident charges. For five of them, $n = 12$; for the other three, the values of n are 7, 9, and 10.

The *per-credit-step-to-plateau* function assesses charges at $\$r$ per credit for 1 to n-1 credits and at $[(\$r \times n) + \$s]$ for n and over credits. The value of s $(s > r)$ is the size of the step, and the plateau begins at n credits. Four of the 20 universities assess undergraduate resident charges by this type of function. The steps occur between 6 and 7, 7 and 8, 8 and 9, and 11 and 12 credits. The plateaus, of course, begin at the upper ends of these pairs of values.

The *per-credit* function is just that; charges are assessed at $\$r$ per credit for any number of credits. Three of the 20 universities use the per-credit function for undergraduate resident students.

Bi-level functions assess charges at $\$k$ for 1 to n-1 credits and at $(\$k + \$s)$ for n and over credits. The magnitude of the step between n-1 and n credits is $\$s$. Two universities use bi-level functions for undergraduate resident charges. The steps occur between 8 and 9 credits in each case.

The *tri-level* function, which includes two steps and three plateaus, is used at one of the 20 universities for assessing undergraduate resident charges. The plateaus are for 1 to 5, 6 to 11, and 12 and over credits.

The *mid-range plateau* function assesses charges at $\$r$ per credit for 1 to n-1 credits, at $(\$r \times n)$ for n to m credits, and $\$r$ per credit minus $[\$r \times (m-n)]$ for more than m credits. The plateau begins at n credits, and ends at m credits. For the single university at which this function is used for undergraduate resident students, the plateau extends from 8 to 13 credits.

Finally, one university uses the *flat-rate* function by which charges are assessed at $\$k$ for any number of credits.

An amazing variety of versions and combinations of these seven types of required charge functions is used by the 20 universities for various types of the differentiated charge cases. In three cases, the form of the function used for undergraduate non-residents is not the same as the one used for residents. Fourteen of the 20 universities use two or more of the seven function types for determining required charges for different types of students. Even where the same type of function is used, the parameters differ in some cases. For example, where per-credit-to-plateau function is used, the plateaus are likely to begin at different points.

The principal difficulties highlighted by the existence of this variety of specific required charge functions have to do with comparing amounts charged part-time and full-time students. While, to date, no survey may have asked What is the required charge for part-time students?, nothing is impossible. The growing proportions of part-time students at many or most colleges and universities, combined with the fact that systems remain in use for assessing student charges established for predominantly full-time student bodies are creating questions about how to determine appropriate charges for part-time students. It is not unusual for a question on policy to generate a survey. The lesson is that the existence of a variety of required charge functions would need to be recognized in any attempt to assemble comparative data on charges for part-time students.

Surveys of required charges for full-time students are common, and the existence of the variety of required charge functions creates problems with such surveys. The college or university using the per-credit-to-plateau or per-credit-step-to-plateau function has little difficulty in stating charges for full-time students. However, the per-credit institution may.

One strategy used by data collectors is to leave full time undefined on the basis that better data results from the application of the local definition of what constitutes full time. Problems with this strategy are that the idea of normal load (for example, 15 credits) is easily confused with the idea of full time, defined as at least 75 percent of normal load, and that full time denotes a range (for example, 12 or more credits) and is, therefore, ambiguous. A second strategy is to define full time very specifically: for example, a student enrolled for 12 or for 15 credits. The problem here is that the specific definition may not be appropriate at all colleges and universities.

A compromise strategy may be to define normal load in general terms and then to ask for amounts charged normal-load students. Student level should be taken into account. Typically, the normal-load values for undergraduates, for first professional students, and for graduate students do differ, and these differences may need to be considered. Also, differences among the specific first professional programs may need to be considered.

An example of how *not* to do it is provided by the present survey of the 20 universities. Data on normal load were not collected. In tabulating amounts charged for various types of students, charges for 15 credits were used. This may be a representative normal-load value for undergraduates, but it is almost certainly inappropriate for first professional and graduate students. Because the purpose of the survey was to examine comparability problems and not to develop comparable data, this limitation to the summary data, most of which is not presented here, is not considered serious.

Non-required charges. Colleges and universities charge individual students for a wide variety of individual services or transactions. The information on such ad hoc charges for the 20 universities is voluminous but cannot be considered definitive because of the great variety of designations used for the charges, specific circumstances in which they are applied, and rates applicable for individual charges under differing circumstances. Because of this variety of practices, it appears to be virtually impossible to assemble comparable and meaningful information on non-required charges.

The number of non-required charges at each of the 20 universities ranges from just over 10 to nearly 25. They can be categorized as (1) admission fees, (2) registration fees, (3) graduation fees, including thesis and dissertation, (4) facility or equipment use fees, (5) special course fees, (6) graduate research and continuous-enrollment fees, (7) voluntary student activity fees, and (8) a variety of other types of fees. Amounts range from 25¢ for an unofficial transcript and $1.00 for an add/drop transaction to $250 for an applied music course (non-majors only) and $325 for a field-trip course.

The lessons learned from this soft information are that, at best, comparable data on non-required charges are difficult to assemble and that required charges account for a variable percentage of the total income colleges and universities obtain from students. Surveys which seek information on required charges leave hidden the financial burden on students of the non-required charges, and given the present state of the art, this burden might as well be left hidden in the surveys.

Recommendations

The following points are offered for consideration by the person seeking to collect comparable data on student charges from any group of colleges and universities.

1. Define terms carefully and avoid the term *tuition*. It might even be desirable to avoid the term *fees*, because it means different things at different colleges and universities.

2. Seek information on total required charges and insure that survey instructions specify that special required charges are included.

3. In the case of public colleges and universities, ask for total amounts of required charges assessed non-resident students as compared with resident students.

4. Specify the category or categories of students for which required charge amounts are desired. Of most interest usually will be the rates that apply to the greatest numbers of undergraduate students. Instances of lower division versus upper division differentiation need be recognized. Separate information on rates applicable to graduate students and to students in specified first professional programs may be of interest. Beyond these basic categories, variations in the practice of differentiation by program and level can be addressed, if one really cares.

5. If required charge amounts for full-time students are desired, recognize that full time spans a range of number of credits enrolled and define what is meant by normal load. Then ask for rates applicable to normal-load students. Consider distinguishing between normal load for undergraduate, graduate, and first professional program students. Seek information on required charges for part-time students with great care and on the basis of an understanding of the variety of required charge functions that is in use.

6. Recognize that students pay non-required as well as required charges, but do not attempt to collect comparable data on non-required charges unless a specific purpose requires it and, then, only with considerable planning and care. Do not divide financial report amounts of income from tuition and fees by any counts of number of students and expect to be able to interpret the resulting averages.

The question raised by the title of this paper is Can student charge information collected from several colleges and universities be compared? The answer seems to be that if sufficient understanding, thought, and time are devoted to planning, data collection, and analysis, reasonable degrees of comparability of major types of student charge data can be obtained.

Footnote

[1] The 20 universities are: University of California-Berkeley, University of California-Los Angeles, University of Illinois-Urbana, University of Iowa, Iowa State University, University of Kansas, Michigan State University, University of Michigan, University of Minnesota, University of Missouri-Columbia, University of Nebraska-Lincoln, Ohio State University, University of Oregon, Pennsylvania State University, University of Pittsburgh, Purdue University, University of Texas-Austin, University of Virginia, University of Washington, University of Wisconsin-Madison. In a few cases, data for separate medical school campuses are included.

MEASURING INSTITUTIONAL FINANCIAL HEALTH

Richard E. Anderson
Teachers College, Columbia University

Institutions of higher education have entered a period of fiscal stringency. Private institutions, with heavy reliance on tuition, are particularly vulnerable. Yet, in spite of these financial concerns, there is only limited knowledge concerning the measurement of financial well-being. Certainly, there is no consensus with regard to the methods of measurement. Many researchers rely heavily upon the Higher Education General Information Survey (HEGIS) data. The obvious advantage is that these data are collected in a uniform manner, presumably, from every institution in the country. However, as many campus officials will admit candidly, the responsibility for the HEGIS reports is often delegated to nonprofessional office workers. Moreover, while the data that are collected are important, other useful data are not accumulated in that federal survey. Certainly, the fact that HEGIS financial information concentrates on current fund data is a serious limitation. Murdock and Davis (1975) advocate the use of institutional financial statements for outside evaluation of colleges and universities. Their argument becomes even more forceful with the increasing acceptance of the audit guide for colleges and universities published by the American Institute of Certified Public Accountants (AICPA) (1973) which sets standard guidelines for the form and substance of the auditor's product. The analysis reported in this paper makes extensive use of the college annual financial reports and supplements that information with data on students and faculty.

Turning from the source of data to the analytic format, this researcher takes the position that it is unproductive to look for one "bottom line" measure. Understanding the complex nature of colleges and universities, this may seem to be self-evident. Yet, many researchers continue to seek this final, but elusive, measure. Bowen and Minter recognize the problem, yet they inexplicably assign "arbitrary weights . . . to convert the data into a single index of 'strength' " (1976, p. 89). Lupton, Augenblick, and Heyison (1976) were more explicit and evoked a storm of protest. (See Finn, 1976; Johnstone, 1977.) The point is that it is probably impossible to create one faultless measure of institutional well-being. This report uses five dimensions of institutional health: demand for the product, liquidity, debt structure, resources, and operational analysis.[1] For each dimension, a number of specific indicators are used without preassigning a value to any one of them.

An additional criticism of college and university financial analyses is that they attempt to evaluate a set of institutions which is too broad and diverse. The analytic framework described here was applied to similar types of private colleges. It is not appropriate for public institutions, nor even very large private ones. The methodology could, however, be modified to suit these types of institutions.

Purpose

One purpose of this report is to describe a relatively straightforward system for evaluating college and university financial health. The word relatively should be emphasized because the task is, by its nature, not a simple one. There is no substitute for informed judgments. However, a consistent framework can assist in the initial perception of problems and in framing questions for further study.

A second purpose of the report is to provide reference data for comparison. Again, these data can be very useful in identifying possible problems and for suggesting areas which need further study. While the study upon which the report is based examined the financial trends of seven subgroups, as well as the trend of the full sample, only the trend of the complete sample will be reviewed in this report. One reason is that the data for the subgroups are far more similar than they are disparate. A second reason is that some of the subgroups are rather small. Therefore, greater reliance can be placed on the trends revealed from the study of all 40 colleges included.

Sample Institutions

Forty colleges participated in the study. Each had either a single-sex admissions policy or was religiously oriented in the 1960s. Some of the colleges became coeducational. Some became more secular. And, some changed very little in these regards. All had taken the College and University Environmental Scales (CUES).[2] Because of these limitations, the sample cannot be considered, necessarily, as representative of all small private colleges. However, because most small private colleges had religious ties in the 1960s and many were single-sex, this limitation is not as restrictive as it may first seem. Moreover, it was already pointed out that the data for the subgroups showed many more commonalities than differences. This general uniformity further supports the contention that these data provide a reasonable estimate for the financial trends of most small private colleges, particularly nonselective ones. With the exception that there are no colleges from the far west, the sample represents well the geographic distribution of all small private institutions in the country.

Methodology

Consolidated balance sheet. College and university financial reporting practices have historically focused on the control and use of funds accrued from separate sources. From this principal of stewardship has evolved college and university fund accounting—separately aggregating and reporting financial information. While one may be reluctant to quarrel with the need to maintain separate records for certain funds, it is difficult to reconcile the extremes to which this principle is carried, that is, the absence of a final aggregation in the financial reports. Such an aggregation is necessary if one is to make any sense of trends in debts, assets, and equities. Indeed, many critics have advocated the use of consolidated balance sheets. (See Jenny, 1973; Bastable, 1973; Price Waterhouse and Company, 1975; and Wilkinson, 1976.)

This study created consolidated balance sheets for each institution, and an average balance sheet for all institutions, in the following manner:

1. The agency fund was excluded from the analysis.
2. Assets were subdivided into three categories: (1) liquid assets, (2) other assets, and (3) fixed assets. Liquid assets were considered to be all assets which could be readily converted

into cash to meet current obligations. These assets include cash, stocks, bonds, and interest receivable. Cash in the loan fund was not considered liquid because this money is typically federal money or money matching federal funds. Fixed assets included all building, land, equipment, and construction in progress. The remaining assets were placed in the "other" category: accounts receivable, inventories, student loan fund assets, and real estate holdings.

3. Liabilities were grouped in a fashion similar to assets: (1) liquid assets, term debt; (2) other debt; and (3) long-term debt. All obligations of college requiring cash payments within one year including interest payable, accrued wages, withheld taxes, and due principal payments were put in the short-term debt grouping. Long-term debts are those liabilities of the colleges that are payable after one year (e.g., mortgages and bonds). Debts not considered short- or long-term were grouped in the "other" category and include: deferred revenues, debts to religious orders which operate the institution, and the federal portion of the NDSL loan funds.

4. Total equity is defined as the total of all fund balances except agency fund. Separate fund balances were also reviewed.

5. Dealing with the loan fund presented a particular problem. Generally, about eight-ninths of the loan fund is federal money. It was decided to include loan fund assets and count the federal portion of the funds as an "other" liability.

6. Inter-fund borrowings were eliminated except as they involved the agency fund.

Combining unrestricted and restricted funds. At many institutions, particularly research universities, combining restricted and unrestricted dollars would be likely to yield a meaningless aggregation. However, for these small colleges, the simplicity gained by combining the two categories seemed well worth the slight distortion. First, based upon twenty-one colleges for which data were available, restricted income represented less than ten percent of the total current fund income in 1975. Second, the restricted income at these colleges typically was closely related to their educational mission (e.g., student aid). If these restricted funds were unavailable, it is likely that they would need to be replaced with unrestricted money.

Price adjustments. To adjust the data so that they are comparable from one year to the next, the Higher Education Price Indexes (HEPI) were used. Price adjustments were applied only to operating income and expense data. For a more thorough discussion of price indices, see Halstead, 1975, and/or Lanier and Andersen, 1975.

Per student adjustments. Another adjustment to establish comparability is to divide by units of output—in this case, the number of full-time-equivalent students. This adjustment can be made for both income and expense reports as well as for the balance sheets.

Specific measures. This study partitioned the financial/operating analysis into five areas: (1) demand, (2) liquidity, (3) debt structure, (4) financial resources, and (5) operating results. In each area several measures were used. They are summarized below.

1. *Demand:* Demand for places is obviously of critical concern for these tuition-dependent institutions. A number of measures were used and the interrelationships between the measures were considered—enrollment, applications, percent accepted, percent of accepted students enrolling, percent of students receiving financial aid, average SAT scores, percent of commuting students, percent from out of state, and the percent of the student body over the age of 25.

2. *Liquidity:* These measures are intended to probe the solvency of an institution, that is, how vulnerable the institution is to the demands of creditors. Specifically, the measures compare resources with debts. Fund data are clustered because an institution is unlikely to allow bankruptcy if it has sufficiently large available resources in any of its funds. These funds need to be expendable, but even if they are restricted the money can be borrowed or used as collateral. The most direct measure is the ratio of liquid assets to short-term debt. For the purposes of this report, this ratio shall be called the liquid ratio. A second measure of liquidity is the adjusted liquid ratio. It is identical to the liquid ratio except that endowment funds are excluded. Thus, it assesses the ability of the college to meet cash flow without tapping endowment. An additional reason for including this measure is that the liquid ratio relies on the rather erratic book value of endowment. Inclusion of endowment book value may be particularly misleading with respect to trend data. The final measure is short-term debt as percent of current fund income. This statistic scales short-term borrowing against dollar volume of operation.

3. *Debt structure:* These statistics are intended to array the financing structure of the college. Are the colleges relying more upon debt? The most direct measure is the ratio of debt to equity. A second measure is total debt as a percent of current fund income. Again, this statistic scales debt against the volume of operation. The final measure selected is debt service (principal and interest payments) as a percent of current fund income. Termed debt burden, this statistic estimates the relative drain of debt payments on the current fund.

4. *Resources:* The intent of these criteria is to probe trends in the financial ability of the institution to deliver education. Truly, these measures are rudimentary proxies. Yet, all things being equal, a wealthy institution is more likely to succeed in its mission than a poor one. The primary measure of resources is total equity or net worth (defined as the sum of all fund balances except the agency fund). This measure is further adjusted for depreciation. An additional measure, equity per student, corrects for the number of students over which the equity must be spread. Equity per student with investment in land, buildings, and equipment excluded and endowment equity per student were also examined.

5. *Operating results:* Relying heavily on the current fund income and expense statements, these statistics detail revenue and expenditure patterns and associated statistics for the ten-year period. They are not individually reviewed here because they are commonly found in financial analyses of colleges and universities.

Collecting financial data. Each college was requested to submit four audited financial statements: 1964–65, 1967–68, 1971–72, and 1974–75. In addition, complete data on faculty and students for these same years were assembled. To validate the collected data, the estimates, and the measures developed, each college was visited and the chief business officers were interviewed. After reviewing the work sheets and findings with these officers, it became clear that the degree of error in the work sheets was not unduly troublesome. With minor exceptions, the indicators of this study seemed to highlight well the ten-year fiscal trends. Occasionally, new information would surface (e.g., an undetected accounting change) and the data were altered accordingly. But in most instances, the business officers felt the measures were accurate and revealing.

Results

Demand. Because tuition represents two-thirds of the total revenue of these institutions, enrollment is obviously a critical concern. In this regard, there is reason for both optimism and concern. Enrollment increased from an average of 920 students in 1965 to 1,114 students in 1972. Since 1972, the number of students has been stable. Thus, it appears that these colleges have been able to hold their own. Another cause for cautious optimism is the fact that the percent of accepted students choosing to enroll has remained relatively stable (about 66 percent). And, according to the returned questionnaires, these colleges have not become unduly reliant on commuter students; two-thirds of their students board at the institution. In addition, the percentage of students coming from out-of-state has declined only slightly (from 37 to 34 percent). These colleges have, however, become more dependent on older students. Students over the age of twenty-five increased from four to nine percent of the student body, and the plans are to greatly increase this percentage. Of more concern is the quality of the student. The percentage of accepted students has risen rapidly. In 1965, these colleges accepted 72 percent of their applicants. Now they accept 84 percent. Consequently, the SAT scores of entering students are falling more rapidly than the national average (10 vs. 6 percent).

Liquidity. The liquidity measures attempt to assess cash-flow trends and the vulnerability of the sample institutions to short-term creditors. Table 1 displays the average consolidated balance sheet for all institutions and is adjusted on a per student basis. Examining this table, one notices that liquid assets only grew 36 percent while short-term debt increased 157 percent. More to the point, the average liquid ratio declined from 78 to 13.[3] Or, perhaps even more germane is the fact that in 1975, between 15 and 20 percent could not meet their current obligations even if they liquidated their entire endowment. Obviously, there is a serious and growing cash-flow crisis at these small colleges.

Table 1

Consolidated Balance Sheet—Per/Student: All Colleges

	Years			
	1965	1968	1972	1975
Assets:				
Liquid assets	1,949	2,055	2,278	2,644
Other assets	810	950	1,498	1,829
Plant assets	6,986	8,031	9,283	10,510
Total assets	9,745	11,036	13,059	14,983
Debt:				
Short-term debt	162	202	339	417
Other debt	389	537	874	1,026
Long-term debt	1,465	1,885	2,248	2,559
Total debt	2,016	2,624	3,461	4,002
Equity:				
Current fund equity	226	191	75	92
Plant equity	5,367	5,872	6,676	7,790
Other plant fund equity	201	333	332	381
Endowment equity	1,891	1,976	2,460	2,540
Loan equity	51	40	55	78
Total equity	7,729	8,412	9,598	10,981
Total debt and equity	9,745	11,036	13,059	14,983

Debt structure. Calculating from Table 1, average debt as a percent of average equity increased from 26 percent in 1965 to 36 percent in 1972. It remained at 36 percent in 1975. So, while the average debt-to-equity ratio[4] was slightly higher, the trend is the same. Debt burden has increased from 5.2 to 5.6 percent. Moreover, because of the inclusion of balloon payments (payments which increase with time), this percentage is expected to become larger. Average debt as a percentage of Current Fund Income, however, has declined 111 percent to 102 percent.

To summarize, the average institution has significantly increased its debt since 1965 but not in recent years. Since 1972, there has been a general reluctance to assume long-term debt. However, as noted earlier, there is increasing dependence on short-term debt to finance the summer cash flow.

Resources. An important measure of the financial trends of private colleges is that of equity or net worth. Equity, as a measure of ownership, represents the resources an institution can bring to bear on the education of students. In this regard, total equity is more important than total assets because the assets may be funded with debt, and the debt must be serviced. With the exception of the current fund, the trend is uniformly upward. The large gain in the plant fund is not unexpected. Spurred on by rising enrollments and low interest federal loans, most of these colleges increased their plant rapidly in the 1960s. Mandatory repayment schedules insure the payment of plant debt with concurrent accretion of plant equity. The size of the increase in endowment was not fully anticipated. However, as noted previously, the trend in book value does not necessarily mirror the trend in market value. For about half of the 40 institutions, information on market value was available. These data reveal a rapid rise from 1965 to 1972 and then an equally swift decline in 1975.

Although current fund equity is a minor portion of total equity, it is significant that it has declined so rapidly. In 1965, 12 percent of the study colleges had negative current fund balances. By 1975, this statistic had risen to 38 percent. To some extent, this statistic may represent a random reassignment of funds from one group to another. Or, this change may parallel, and be symptomatic of, cash flow problems. That is, at the end of the year there are not enough assets in the current fund to meet current obligations.

The average total equity per student has increased at an annualized rate of about 4 percent. Colleges, however, do not depreciate their capital assets, and this obviously biases the trend in an upward direction. By assuming a forty-year life on plant and equipment, total equity is increasing at a much slower rate—about 1 percent per year since 1972.[5]

Summarizing, average resources have not diminished. Rather, they appear to have increased slightly—even if adjustments are made for enrollments and for depreciation. However, one should bear in mind that these are average data. Thus, we can estimate that total resources are declining for a significant minority of these colleges.

Operating position. Table 2 arrays the average current fund income and expenditures per student for all 40 colleges and indicates that both costs and income per student are rising faster at these colleges than the Higher Education Price Index constructed by Halstead (1975). Instructional expenditures, however, have remained relatively stable. In addition, the student-faculty ratio rose from 14 to 16. The most rapid rise in expenditures has been in sponsored research and programs, although these activities still represent a small part of the budget. Both expenditures for student services (primarily for the admissions office) and student aid are rising rapidly. Student aid expenditures, as a percent of tuition, has increased from 12 to 16 percent. The changes in student aid and admissions, of course, reflect the vigorous efforts of these colleges to keep up enrollments. Administration and maintenance also show sizable increases. However, when maintenance expenditures are corrected for plant size, they decline from 4.7 percent of plant book value in 1965 to 3.4 percent in 1975.

The percentage of income from tuition has been relatively stable at 66 percent. Outside income (gifts and grants) has risen, with government being the prime source. This is evidence of the increasing dependence of these colleges on the state and federal governments. Moreover, these data understate the trend because of the increasing number of students who receive state and federal assistance. The source of these funds is not detected by institutional accounting methods.

Both auxiliary income and expenditures per student have declined. This suggests that these colleges have become more dependent upon commuter students than their direct responses would indicate.

Turning to the often cited surplus/deficit information, the reader will note that there are three surplus/deficit calculations. The first excludes all transfers. The second includes only mandatory transfers. And the third takes into account both mandatory and nonmandatory transfers. The AICPA audit guide is resoundingly silent with regard to the definition of surpluses and deficits. The author's preference is to include only mandatory transfers. Using this second calculation, one notes an aggregate, but diminishing, surplus.

In sum, the operating budgets of those colleges are being squeezed. Money that might have been in the instructional budget is being diverted into the effort to recruit students. Maintenance as a percent of plant value is falling. With regard to income, outside sources, particularly the government, have provided important relief.

Summary

The purposes of this paper were to present a model for assessing small college financial health and to provide comparative data for use by other small colleges. The second objective requires little comment. An average consolidated balance sheet and an average income and expense statement were included in this report, along with other selected statistics. While space precluded a more complete set of data, they are available (Anderson, 1977). Perhaps the first objective could best be summarized by assessing the financial analysis with what might have been achieved if only the operating budget and enrollment had been examined.

Table 2

Current Fund Income and Expenditures
Per Student: All Colleges*

	Years			
	1965	1968	1972	1975
Income				
Tuition	1,726	1,884	1,987	2,070
Outside income	325	432	488	696
Investment income	150	141	125	147
Contributed services	255	211	153	120
Other internal income	101	138	117	105
Educational and general	2,557	2,806	2,870	3,138
Auxiliary services	978	963	822	820
Total current fund income	3,535	3,769	3,692	3,958
Expenditures:				
Instructional expenditure	1,126	1,190	1,158	1,197
Administration	249	263	258	298
Library	117	135	118	136
Maintenance	314	313	316	351
Student services	150	183	213	241
Student aid	211	249	270	325
Sponsored research and programs	26	41	83	105
Other expenditures	339	443	412	393
Total educational and general expenditure	2,532	2,817	2,828	3,046
Auxiliary services	818	814	732	735
Total current fund expenditure	3,350	3,631	3,560	3,781
Surplus 1	185	138	132	177
Mandatory transfers	59	80	90	137
Surplus 2	126	58	42	40
Other transfers	11	55	62	67
Surplus 3	115	3	(20)	(27)

A review of full-time equivalent (FTE) enrollment would suggest that these colleges have been able to stabilize enrollment. However, by reviewing Scholastic Aptitude Test (SAT) scores, the age distribution of students, and the percent of students accepted, as well as by reviewing the increased expenditures on student services (admissions) and student financial aid, it becomes clear that this enrollment stabilization was not without a price. While these data do not provide a complete analysis, they should provoke further study. Indeed, part of the full research project was to assess environmental trends. The result of this research showed that those colleges which were most successful in maintaining or increasing enrollments were also the most likely to show declines in sense of community, campus morale, and faculty-student relationships, as measured by changing CUES scores.[7] Although one must be cautious about generalizing, the results clearly indicate that the measurement of demand is far more complicated than counting students.

Probably the most significant new aspect of college finance uncovered by this analysis is that of the increasing liquidity problem. The flexibility, even the existence, of many of these colleges, is threatened by the relative size of their short-term debt. While total debt has stabilized, short-term debt continues to grow. However, not all of the institutions in this study have brought their total debt under control. A few colleges in this study were technically insolvent (total debt exceeded total assets). None of this information would be available from HEGIS reports or from the income and expense statements.

One bright spot was the increase in fiscal resources. However slight this increase was, it indicated that most of the colleges have some resources for reorienting their efforts. Again, these data are not available from HEGIS reports or from operating statements.

Recommendations

Although this report has implications for the operation of small private colleges, it has concentrated on informational needs and formats. The recommendations will be similarly inclined.

College presidents and financial officers must consider both internal and external financial information needs. With respect to both reporting requirements, these officers should give more consideration to consolidated financial reports, e.g., grouping fund data. This is not a recommendation that current reporting practices be abandoned. The conventional reports are well-suited for the fiduciary responsibilities of the colleges and universities. Moreover, those reports have the very real advantage of familiarity, at least to many people. The format of the conventional reports, however, focuses administrative, trustee, and staff attention disproportionately on the current fund surplus and deficit. A consolidated report would expand the attention of the concerned constituencies. It would highlight, for example, an incipient cash flow problem—information that is critical for many of the colleges in the study reported here. Administrators who wish to develop a consolidated report should consult the model developed by Jenny (1973) or examine the financial statement of the University of Rochester.

In spite of the available models, change will not be easy. College financial administrators who wish to improve the utility of their financial reports will be hampered by the standard reporting conventions on the one hand and the lack of consensus for reform on the other. The American Institute of Certified Public Accountants has made significant refinements in the accounting and reporting practices of colleges and universities. Business officers (NACUBO) are, however, reacting in a generally negative way to a proposal by the AICPA for more sweeping accounting changes. Many of these criticisms have merit. Still, college business officers must face the fact that self-imposed accounting improvements have been relatively insignificant. This must be changed. Professional associations, researchers, and business officers should develop meaningful accounting conventions which can be used by all, or at least large groups of colleges.

Further, researchers must work to develop, test, and standardize more meaningful statistical measures of financial health. This paper presented a few of the measures that have been adopted from security analysis. Standards were provided for private liberal arts colleges. It is hoped that these measures will be tried, criticized, and improved. Separate measures should be developed for public institutions and large private universities.

If institutions of higher education are to retain public confidence, they must improve their reporting techniques and methods of analysis. An accounting system closest to the corporate model and related analytic tools used by security analysts can help. College business officers, researchers, and professional associations should act now to help shore up sagging public confidence. College and universities are not listed on a securities exchange, but their stocks are, indeed, traded publicly.

Footnotes

[1] I am indebted to Collier (1973 a,b) and Carroll (1973) of the National Center for Higher Education Management Systems for sharing some draft papers with me. Many of the ideas in those papers found their way into my analytic framework.

[2] The reason for these limitations is that the purpose of the study was to evaluate the financial and educational impact of the strategic change from single-sex to coeducational admission and the strategic change from a religious to a secular orientation. The sample of colleges was limited to those that had taken CUES because, by readministering this survey on each campus in 1975–76, a measure of environmental change was achieved. More detailed results of the study are available in the complete research report. (See Anderson, 1977)

[3] The variation of the aggregate ratio to the average ratio is explained by the fact that some colleges had very high liquid ratios and raised the average statistics.

[4] See explanatory note 3.

[5] It is likely that even these adjustments are inadequate. Accountants looking at the corporate reports have been advocating some form of "replacement cost accounting." This technique would adjust depreciation to take into account the cost to replace assets. It is acknowledged, for example, that the profits of the steel industry are grossly overstated because the rate of depreciation used does not adequately provide for future plant replacements. Similarly, the method of estimating depreciation for these colleges did not consider replacement costs and, consequently, is likely to overstate growth in equity.

[6] All dollars in constant 1975 dollars.

[7] For example, the typical women's college which remained single-sex declined 6 percentiles on the community scale, declined 4 percentiles on the campus morale scale, and rose 9 percentiles on the quality of teaching scale. In contrast, the typical women's college which admitted men fell 33 percentiles on both the community and campus morale scales and fell 3 percentiles on the quality of teaching scale. The evidence is similar, although less dramatic, for the secularization of religious colleges.

References

American Institute of Certified Public Accountants, *Audits of colleges and universities*. New York: American Institute of Certified Public Accountants, 1973.

Anderson, R.E. *Strategic policy changes at private colleges*. New York: Teachers College Press, 1977.

Bastable, C.W. Collegiate accounting needs re-evaluation. *The Journal of Accounting*, December, 1973, pp. 51–57.

Bowen, H.R., and Minter, W.J. *Private higher education, second annual report*. Washington, D.C.: Association of American Colleges, 1976.

Carroll, M. An adaptation of financial analysis to higher education (preliminary draft). Boulder, Co: National Center for Higher Education Management Systems, 1973.

Collier, D.J. The determination of institutional financial distress: A proposal for decision making (preliminary draft). Boulder, Co: National Center for Higher Education Management Systems, 1973. (a)

________. A discussion of institutional financial analysis (preliminary draft). Boulder, Co: National Center for Higher Education Management Systems, 1973. (b)

Finn, D.F. Point of view. In *Business Officer*. Washington, D.C.: National Association of College and University Business Officers, October 1976.

Halstead, D.K. *Higher education prices and price indexes*. Washington, D.C.: U.S. Government Printing Office, 1975.

________. *Higher education prices and price indexes, 1975 supplement*. Washington, D.C.: U.S. Government Printing Office, 1976.

Jenny, H.H. *The consolidated net worth of private colleges*. Ohio: The College of Wooster, 1973.

Johnstone, D.B. Published letter. *Change*, February 1977, p. 5.

Lanier, L.H. and Andersen, C.J. *A study of the financial conditions of colleges and universities: 1972–1975*. Washington, D.C.: American Council on Education, 1975.

Lupton, A., Augenblick, J., and Heyison, J. The financial state of higher education. *Change*, September 1977, (lead article).

FINANCIAL HEALTH

Murdock, J.L. and Davis, D.A. Improving financial analysis and decision making in institutions of postsecondary education. In R.G. Cope (Ed.) *Information for decisions in postsecondary education*. Tallahassee, FL: Association for Institutional Research, 1975.

National Association of College and University Business Officers. NACUBO response to AICPA discussion draft on accounting for nonprofit organizations. Washington, D.C.: National Association of College and University Business Officers, 1977.

Price, Waterhouse, and Company. Position paper on college and university reporting. New York: Author, 1975.

Wilkinson, W.M. The fiction of "restricted" funds in institutional accounting. *College and University Business Officers*, 1976, *10*(3), pp. C–F.

BUDGET FORMULATION BASED ON INSTITUTIONAL PLANNING

W. Sam Adams
University of Wisconsin-Oshkosh

For institutional planning to impact policies and resources effectively, it should be a comprehensive, continuous, and systematic process involving the broad participation of the university community. A planning process evaluates the past and present, anticipates the future, and formulates strategies to shape the future of the institution. Planning should influence the basic elements which comprise a university—missions, curricula, personnel, facilities, and budgets. These elements need to be analyzed from the perspective of how they interact with each other and with constraints external to the institution. The result of the planning process is an annual, or periodic, master plan for the institution projecting for a stipulated time into the future. The planning effort should provide greater coherence in, and understanding of, university decision making in addressing policy issues and resource allocation and reallocation.

The discussion which follows describes the essential elements of a planning process and resource allocation model adopted by a public four-year university within a complex system of higher education. It also illustrates some of the outcomes of the process after several years of implementation.

The Context for Planning

An essential precondition for effective planning are statements on institutional mission, planning assumptions, and university goals. It is important that these statements be published and distributed to the campus community prior to each annual planning cycle so that all constituencies know the parameters within which to plan. Each of these statements is defined here with illustrative samples.

Institutional mission. Almost every university has at least one mission or purpose statement which has been developed by the institution, or a board of regents if the institution is part of complex multi-campus system. These statements are usually broad and comprehensive and are long-range in intention. Sample mission statements are:

- Provide a base of liberal studies as the foundation for university degrees in the arts and letters and sciences, as well as for specialized professional and occupational degrees at the baccalaureate level.
- The university should offer graduate education in the arts and sciences, in business administration, in teacher education, and in programs growing clearly from areas of undergraduate emphasis meeting identified regional and state needs.

Planning assumptions. Planning assumptions refine the context for planning for five to ten years and the primary service area of the university. The assumptions are selective, rather than comprehensive, and are updated each year. Each assumption is chosen for its relationship to university mission statements and potential effect on the university. Sample planning assumptions are:

- Enrollment of FTE students will increase moderately until 1980 and then decrease significantly for at least a decade.
- Public funding will probably, at best, remain at present levels and may even decline in the future on a per-student basis. Resources for change and growth will, therefore, have to be made from base reallocation.

University goals. University goals are formulated from mission statements and planning assumptions. The goals are ends toward which effort is directed and provide a basis from which planning units within the university develop their specific objectives. The university goals are by design and necessity less comprehensive and take a shorter range view than mission statements and planning assumptions. Sample university goals are:

- Program development and support—The university will initiate new programs and modify existing ones in merging areas consistent with student needs and university strengths at the graduate and undergraduate level.
- Accountability and efficiency—New systems of collecting and disseminating information will be developed to insure accountability to various publics about the university programs and operations, increase efficiency, and maximize administrative support of instructional programs.

Unit objectives. Planning units (defined below) objectives with resource implications are developed during the planning process. These are very specific statements, usually having one- or two-year duration. Each unit objective supports at least one university goal. Sample planning unit objectives are:

- To establish a Master of Arts in Humanities degree which involves the departments of English, art, and music in the College of Letters and Science.
- To provide the public with easier access by locating the Continuing Education Division in a central and visible physical facility.

There are several types of planning units. These are defined here to assist the reader in comprehending the extensiveness of the planning process.

College planning units consist of faculty, students and administrators.

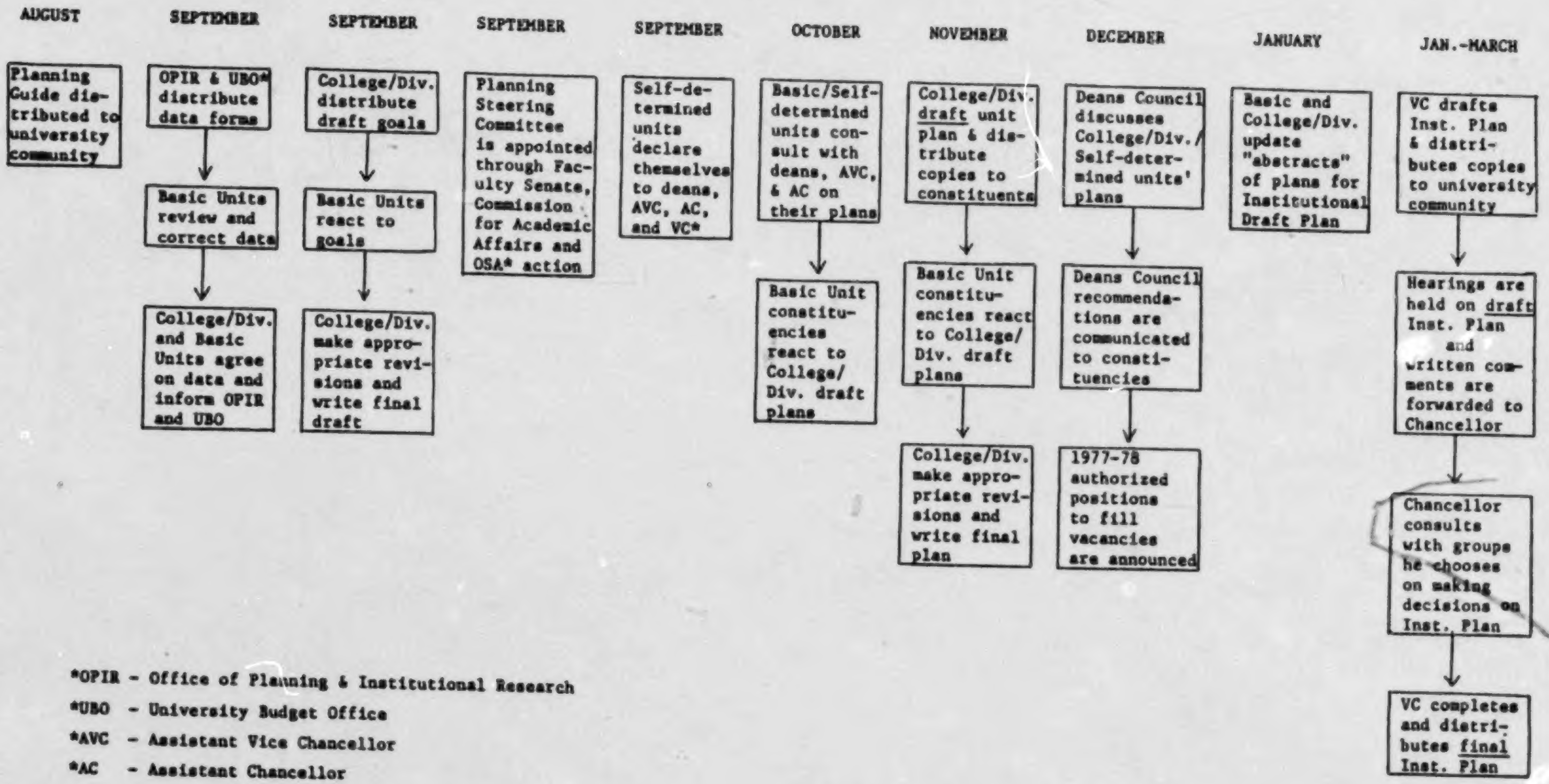
Division planning units consist of university support personnel.

Basic planning units are either academic (departments and programs within a college) or university support (offices and centers within a division).

Self-determined planning units consist of two or more faculty or staff not currently in the same planning unit who have common program objectives and wish to develop a planning proposal intended to better realize those objectives. (This facilitates interdisciplinary and interunit planning.)

The Planning Process

The process is programmed in Figure 1 and displays the flow of activity with a time schedule from initial distribution of the Guide to Planning to the completion of a one-year


AUGUST
Planning Guide distributed to university community
SEPTEMBER
OPIR & UBO* distribute data forms
Basic Units review and correct data
College/Div. and Basic Units agree on data and inform OPIR and UBO
SEPTEMBER
College/Div. distribute draft goals
Basic Units react to goals
College/Div. make appropriate revisions and write final draft
SEPTEMBER
Planning Steering Committee is appointed through Faculty Senate, Commission for Academic Affairs and OSA* action
SEPTEMBER
Self-determined units declare themselves to deans, AVC, AC, and VC*
OCTOBER
Basic/Self-determined units consult with deans, AVC, & AC on their plans
Basic Unit constituencies react to College/Div. draft plans
NOVEMBER
College/Div. draft unit plan & distribute copies to constituents
Basic Unit constituencies react to College/Div. draft plans
College/Div. make appropriate revisions and write final plan
DECEMBER
Deans Council discusses College/Div./Self-determined units' plans
Deans Council recommendations are communicated to constituencies
1977-78 authorized positions to fill vacancies are announced
JANUARY
Basic and College/Div. update "abstracts" of plans for Institutional Draft Plan
JAN.-MARCH
VC drafts Inst. Plan & distributes copies to university community
Hearings are held on draft Inst. Plan and written comments are forwarded to Chancellor
Chancellor consults with groups he chooses on making decisions on Inst. Plan
VC completes and distributes final Inst. Plan

*OPIR - Office of Planning & Institutional Research

*UBO - University Budget Office

*AVC - Assistant Vice Chancellor

*AC - Assistant Chancellor

*VC - Vice Chancellor

*OSA - Oshkosh Student Association

Figure 1. The planning process.

planning cycle. Next, each major step in Figure 1 is explained briefly to assist in visualizing how the process culminates yearly in an updated institutional master plan which determines resource allocations and reallocations.

September. Early in September, colleges and divisions distribute their objectives to constituencies for reactions. Later that month, they make revisions and distribute the final objectives to their basic planning units.

Also, early in September all data to assist planning units in developing their planning documents are distributed by the Office of Planning and Institutional Research (OPIR) and the University Budget Office (UBO). Data for planning consists, in part, of student credit hour production, faculty staffing, program majors, degrees awarded, class size analyses, and unit support costs. By the end of the month, basic planning units review the data provided to them and consult with their respective deans or division heads to reach agreement on any necessary revisions so that a common data base for the institution exists.

Near the end of September, a planning steering committee, consisting of faculty, administrators, and students is named and charged with oversight responsibilities in evaluating the planning process for the current year to improve the next cycle.

During this month, self-determined units (SDU's) also declare their planning intentions to appropriate chairpersons, deans, and university support division heads.

October. Basic units and SDU's discuss, with appropriate deans and division heads, the impact of their plans on staffing, budget allocations, graduate assistant requests, and physical facility improvement requests. By the middle of the month, basic and SDU's submit final planning documents to respective administrative heads and the vice chancellor's office. (Constituents within these units review the draft plan before it is sent to the next higher administrative level.) All planning documents are advisory until the institutional plan is approved by the chancellor.

November. Colleges and divisions develop draft plans and distribute copies to all basic planning units for review and comment. Colleges and divisions are required to list priorities for new academic programs, graduate assistantship assignments, and physical improvements as part of their planning documents. By the end of the month, reactions to each unit are received and integrated into the final plan.

The college and division planning statements are developed in a way similar to that of basic units, and the plan reflects an analysis and synthesis of the plans of its basic units. Colleges and divisions also establish program/function priorities by using uniform criteria. Colleges use quantitative criteria based on institutional data developed by OPIR and UBO as well as qualitative criteria, congruent with those in the Guide to Planning, from the vice chancellor and as approved by the college planning committees. University support divisions do not follow a uniform set of criteria because they are quite diverse in function. However, division heads are required to identify criteria clearly so that basic units know by what performance criteria they will be evaluated.

December. Early in the month, the Deans Council, in a series of open meetings chaired by the vice chancellor, analyzes, discusses, and makes recommendations concerning college, division, and SDU planning of documents. (The Deans Council, during these sessions, consists not only of deans but also of division heads.) The objectives of each college and division, and their resource implications, are assessed in light of university-wide needs. The council then endorses, modifies, or denies planning intentions and requests.

At the conclusion of the sessions, deans and division heads communicate recommendations of the council to their constituencies. At the same time, decisions to fill vacancies and any new positions which can be clearly authorized for the coming year are announced so that the recruitment process can be immediately initiated.

January. In its planning document, each college and division planning unit updates its basic units and its own "abstract" section statements to reflect decisions reached during the deans council planning sessions. Those abstract statements are an important part of the institutional plan.

By the end of the month, the draft institutional plan is completed by the vice chancellor and staff and distributed to all faculty, staff, and student government members, with added copies placed in the university library.

February. By the middle of the month, each dean and division head, joined by the vice chancellor, holds meetings with constituent groups to review the draft institutional plan. Written comments on the draft institutional plan are encouraged and sent to the chancellor.

Near the end of the month, the chancellor convenes governance and administrative officers to consult in making final decisions on the draft institutional plan. The chancellor also meets with the University Budget Committee, which consists of faculty, students, and staff, since the university's budget and internal resource allocations are based on the institutional plan.

March. The final institutional plan in completed by the vice chancellor and staff and, after approval by the chancellor, is distributed on campus as well as to selected external campus agencies, institutions, and associations.

April. The Planning Steering Committee recommends to the vice chancellor and chancellor any revisions in the process for the next planning cycle. Governance groups are encouraged to suggest revisions in university planning assumptions and goals. The chancellor and vice chancellor then consult with governance and administrative officers to determine any changes in the next planning cycle and to announce changes to the campus. The next year's Guide to Planning is then developed and distributed.

Planning Outcomes

At the end of the annual planning cycle in March, institutional policy decisions and resource allocations are determined for one year specifically and for eight years in general. The comprehensive Institutional Plan is the document reporting the aggregate results of planning, from the basic university support and academic unit level, through the division and college level, through the institutional level, (Deans Council) and review by all campus governance groups, to the chancellor. A few examples of outcomes from a recent year of planning follow.

- The College of Education will be reorganized into academic clusters from department structures.
- Self-determined units (SDU's), Alternative Futures, Community Arts, and an Ideal Educator Research Institute will be supported within proposal resource projections.
- Continuing education and outreach activities will be given high priority designations for the future, since the traditional college age pool is declining.
- An Institute for Human Design will be established in a consortial arrangement with a state mental health institute geographically contiguous to the university.
- Faculty and academic staff position allocations will remain the same; however, several position reallocations

within the institution will be made to reflect program priorities.

After two complete planning cycles, three developments can be described as a result of the process. First, many pending issues and concerns which had accumulated at the university level in recent history were resolved in the planning process. Second, the university's staffing and resources are more clearly known now, and effective policies and procedures have been put in place to implement the institutional plan. Third, the quality of university programs has improved through the continuous and comprehensive study and review required by the planning process.

It was determined from the substantial information base compiled in the first two comprehensive planning years that in the future an abbreviated planning cycle would be appropriate in alternate years. Planning documents will be developed by colleges and divisions rather than by basic units and then flow into a university master plan. While basic units will still have an opportunity to review and critique college and division plans, the primary thrust for development will come at the next higher administrative level.

The planning process outlined here should be applicable to many other universities which are interested in developing a "participatory management resource allocation model." It has accomplished the purposes for which it was originally designed: more informed policy decisions and resource allocations, where justified, to meet current and projected circumstances, and greater coherence in, and understanding of, university decision making. As a result, there is a sense within the university that it has attempted to shape its future with greater vision.

THE IMPACT OF FEDERAL FUNDING OF UNIVERSITY RESEARCH ON GRADUATE EDUCATION AND RESEARCH

Jean Elizabeth Girves
Ohio State University

Research and scholarship are major functions of a university as well as necessary and integral parts of graduate education. Federal support of university-based research and changes in support differentially affect the departments that offer graduate education. What is lacking is both the means for assessing the total federal impact on graduate education and a means for exercising a reasonable influence over the direction of the effects (National Board on Graduate Education, 1974). This paper summarizes a study conducted on the impact of federal funding for university research on graduate education and research between 1969 and 1974 at a large midwestern university (Girves, 1976).

Both the level and the composition of federal funding for university research have shifted over the past thirty-five years. The number of federal dollars expended for university research increased dramatically from 1941 to 1964 and then leveled off through the late sixties. Given inflation, the real dollar funding levels between 1970 and 1975 were less than those between 1963 and 1969 (National Science Foundation, 1975). Although the funding levels increased during the sixties, federal research dollars were spread among more disciplines and among more universities.

Dresch (1974) points out that the shifts in the composition of federal support may ultimately be more serious to the graduate education system than shifts in the level of support. Increasing federal support has gone to applied rather than basic reasearch. Contracts, which tend to be short-term, as well as restricted to a specific problem and initiated by the federal agency, are replacing research grants, which tend to be long-term, flexible, and almost entirely initiated by the investigator. This shift may affect the nature of the research performed in the university and the nature of the relationship between research and graduate education.

Orlans (1962), Pusey (1962 and 1963), Dressel and Come (1969) and NSF (1970) studied the impact on universities of federal support for sponsored research. In each case, universities were grouped according to the number of research dollars received. Only NSF compared individual disciplines. These studies largely focused on the similarities and differences among groups of universities within broad academic areas. None gave a comprehensive view of all the disciplines engaged in graduate education. The graduate professional disciplines were omitted altogether. None analyzed the interrelationships among the disciplines within one university.

Sample

This study focused on the relationship between shifts in federal funding patterns for university research and shifts in graduate education and research conducted within the fifty-five departments which offered the Ph.D. degree between 1969 and 1974 in a large midwestern university. The selected departments fall into nine areas which essentially represent the organization of the colleges in the university. The areas are: (1) administrative sciences, (2) agriculture and home economics, (3) arts and humanities, (4) biological sciences, (5) education, (6) engineering, (7) mathematics and physical sciences, (8) medicine and (9) social and behavioral sciences.

Data Collection

Existing data recorded routinely in various university offices were collected by department for fiscal years 1969 and 1974 or for autumn quarters in 1968 and 1973, whichever was appropriate. These data included research activity, budgetary information by source and category, personnel information by source and category, and graduate student enrollment and support information. A departmental profile summarizing these data was prepared by the researcher and sent to each department chairperson for review.

Then, each department chairperson was interviewed. The questions focused on the nature of the research performed in the department, on the relationship between research and graduate education conducted within the department and federally funded research, and on the impact of the shifts in federal funding on the faculty, students, and the graduate program. The chairpersons commented on the data provided and gave possible explanations for any changes that occurred over the five-year period.

In addition, questionnaires were sent to 1,216 graduate faculty members; 58 percent responded. The faculty were asked to estimate the amount of time they allocated to instruction, research, and service and to comment on the necessity for federally supported research in their departments, their success in gaining research dollars, any influence exerted by the funding agencies over the direction of their research, the quality of incoming graduate students, the quality of the apprentice/mentor relationship, and the overall impact of federal support of departmental research on the graduate program in their departments.

Analysis

Both the institutional data and the responses to the questionnaires were grouped by area and were analyzed using simple descriptive statistics; means, percentages, and percent changes. The institutional data, along with the faculty estimates of time spent on research and graduate instruction, were also analyzed using canonical correlations. The canonical correlations between the set of seven federal funding variables and each of the five subsets of the thirty-four graduate education and research variables were computed for each fiscal year and for the changes occurring between them. Table 1 presents the six sets of variables. Table 2 presents the canonical correlations between the set of federal funding variables and the subsets of the graduate education and research variables. (See Girves, 1976, for both the presentation of comparisons by area and for the displays of each paired set of linear combinations in the canonical correlations.) The remainder of this paper highlights and discusses the results of the analyses in relation with the perceptions of the department chairpersons and the faculty members.

Table 1

The Six Sets of Variables Used in Computing the Canonical Correlations

- I. Federal funding variables
    - 1. Number of research projects
    - 2. Number of agencies providing support
    - 3. Number of research projects funded by the primary agency
    - 4. Salaries
    - 5. Equipment dollars
    - 6. Travel dollars
    - 7. Totally federally funded dollars
- II. Graduate education and research variables
    - A. Research activity variables
        - 1. Number of nonfederal research projects
        - 2. Number of nonfederal agencies providing support
        - 3. Number of research projects funded by the nonfederal primary agency
        - 4. Number of graduate instruction hours
        - 5. Number of research and scholarship hours
    - B. Graduate student characteristics variables
        - 1. Quality—undergraduate grade point average
        - *2. Number of first-year enrollments
        - 3. Number of full-time enrollments
        - *4. Number of part-time enrollments
        - 5. Registered quarters after the General Examination
        - 6. Nonregistered quarters after the General Examination
        - *7. Number of doctoral degrees conferred
    - C. Graduate student support variables
        - *1. Number of fellows and trainees
        - *2. Number of research associates
        - 3. Number of teaching associates
        - 4. Number of "others"
        - *5. Number federally supported
        - 6. Number nonfederally supported
        - 7. Number university supported
    - D. Budget
        - *1. University-funded salaries
        - 2. Nonfederally funded salaries
        - *3. University-funded equipment dollars
        - 4. Nonfederally funded equipment dollars
        - 5. University-funded travel dollars
        - 6. Nonfederally funded travel dollars
        - *7. University-funded total dollars
        - 8. Nonfederally funded total dollars
    - E. Personnel variables
        - 1. Number of instructional staff
        - *2. Number of university-funded A&P staff
        - *3. Number of federally funded A&P staff
        - 4. Number of nonfederally funded A&P staff
        - 5. Number of university-funded technicians
        - *6. Number of federally funded technicians
        - 7. Number of nonfederally funded technicians

*These twelve graduate education and research variables exhibited the largest correlations (all greater than .70) with their respective significant canonical variates when the differences between FY 1969 and FY 1974 were analyzed. The canonical correlation between the differences in the set of federal funding variables was .88, which was significant at the .01 level.

Results and Discussion

According to the department chairpersons and the faculty, the nature of the research activity is a major factor in determining the necessity for outside funding. When it is needed, the graduate program experienced by the individual student, as well as the research performed by the faculty, will be affected. Research conducted in the sciences, for example, requires substantial investments in equipment, supplies, and personnel. Graduate students in these departments are often supported as research associates for ongoing research projects. Their dissertations are usually part of the overall project. Consequently, a major portion of a student's research experience, which provides the basis for the student's future research activity, is determined by the research projects that do get funded.

At the other extreme, research conducted in the arts and humanities requires time and travel money. Research in this area is an individual activity. Students are supported as teaching associates. Their dissertations are independent of their teaching responsibilities and are often independent of the research performed by their advisers.

While over 90 percent of the faculty responding to the questionnaire engaged in research or other scholarly activities during 1969 and 1974, the percent who engaged in federally funded research varied dramatically among departments and declined between 1969 and 1974. Although most faculty said that they did not perceive any influence by federal funding agencies over the direction of their research, those faculty in engineering and in the biomedical sciences frequently reported that federal agencies had influenced the direction of their research. Some indicated that proposals were written "cosmetically;" others modified their focus from studying a particular aspect of a normal cell, for example, to studying the same aspect of a cancer cell; few changed directions entirely. Faculty in the arts and humanities, on the other hand, commented that increasing federal dollars provided a focus to the research underway.

Faculty members in administrative sciences, arts and humanities, biological sciences, education and social and behavioral sciences generally reported increases in the amount of research they performed. The faculty in engineering, mathe-

Table 2

Summary Table of the Canonical Correlations between the Set of Federal Funding Variables and Each Subset of the Graduate Education and Research Variables for FY 1969, FY 1974 and the Differences between FY 1969 and FY 1974

Variable Sets	Canonical-R[a]	Redundancy[b] 1	Redundancy[b] 2
I-IIA			
1969	.7666	.306	.260
1974	.7527	.300	.305
Difference	ns	—	—
I-IIB			
1969	.8448	.437	.407
1974	.8809	.446	.483
Difference	.7762	.272	.208
I-IIC			
1969	.8849	.621	.523
1974	.9145	.624	.438
Difference	.8185	.253	.361
I-IID			
1969	.9060	.683	.491
1974	.9359	.633	.540
Difference	.7490	.324	.329
I-IIE			
1969	.9851	.720	.635
1974	.9793	.787	.517
Difference	.8274	.316	.341

$p \leq .01$

a. Only the first significant canonical root has been presented.

b. *Redundancy 1:* the set of federal funding variables given the subset of graduate education and research variables. *Redundancy 2:* the subset of the graduate education and research variables given the set of federal funding variables.

matics, and physical sciences and medicine reported decreases. In addition to changes in federal funding patterns, the faculty also cited changes in their own interests and lack of time as reasons for changes in the amount of research they produced. Overall, however, the relative amount of time expended on research by faculty remained about the same for 1969 and 1974. Department chairpersons and faculty members alike indicated that in many disciplines reduced research productivity was due to the increased competition for fewer federal research dollars. There was no relationship between the extent of involvement with federally funded research and the amount of time allocated to research activities or to graduate instruction. These two variables did not contribute to the significant canonical correlations (.77 in 1969 and .75 in 1974) between the research activities and the federal funding variables. Involvement with nonfederally funded research contributed strongly to the relationship.

The reputation of the department's research capabilities as perceived by faculty at other universities and the availability of financial support were given by department chairpersons as the two major reasons why graduate students were attracted to particular departments. As a result, faculty from those departments that were heavily involved with federally funded research perceived a strong relationship between federal funding and the quality of the students they attracted. Those faculty from departments that were not involved with federally funded research saw no relationship between the quality of the students attracted and federal funding. Motivation and preparation were given as the important indicators of student quality. Changes in incoming grade point averages were not associated with changes in the federal funding variables.

Both the type and source of student support shifted between 1969 and 1974. More students were supported by university funds and as teaching associates in 1974. Involvement with federally funded research was strongly associated with support of students. The canonical correlation was .88 in 1969 and .91 in 1974. In general, as involvement with federally funded research declined, the number of research associates declined and the number of teaching associates increased. Chairpersons and faculty were concerned that the shift away from research appointments would undermine the preparation and training of the future scholars in their disciplines.

Those departments that were heavily involved with federally funded research tended to be associated with high first-year, full-time and part-time graduate enrollments. As their involvement with federally funded research declined between 1969 and 1974, their enrollments also declined (the canonical correlation equals .78). New graduate student enrollment patterns were emerging in 1974. More students enrolled part-time. More were enrolling in the professionally oriented disciplines. Both the lack of available support and the perceived poor job market accounted for these shifts. In effect, society's perceived needs were being reflected by the lack of federal support for graduate students in many disciplines.

The uncertainty surrounding federally funded research was very disturbing to the department chairpersons. Internal planning became virtually impossible. Federal research dollars would suddenly and unexpectedly be eliminated or drastically reduced. Personnel hired to support a research project would have to be let go, supported on another project, or supported by the department. At other times, funding would suddenly become available but would have to be spent within a short period of time. Commitments to support graduate students often could not be made until late summer, after many students had made other plans. These problems created frustration, low morale, and inefficiency. The faculty members and the department chairpersons in the biomedical sciences were affected the most severely.

This uncertainty was due, in part, to the apparent shift, between 1969 and 1974, from awarding research grants to awarding research contracts. Many perceived these contracts as being restrictive, short-term, and less supportive of the educational aspect of research performed in a university environment. Fewer graduate students were supported as research associates in favor of full-time technicians. Of those who were supported as research associates, many were supported on short-term projects. Consequently, the continuity of their research experiences and of the research efforts of the faculty deteriorated.

Those departments heavily involved with federally funded research, particularly those in engineering, tended to have large financial commitments from nonfederal sources as well as from the university in 1969 and large financial commitments from the university in 1974. Decreases in federally supported research were associated with decreases in nonfederally supported research and increases from the university.

As with the departmental expenditures, involvement with federally funded research was strongly associated ($r=.99$ in 1969 and .98 in 1974) with the number of personnel supported in 1969 and 1974, particularly those supported from federal and nonfederal sources as technicians or administrative and professional staff. The university-supported personnel showed a much stronger association with involvement with federal research in 1974 than in 1969. Overall, the number of instructional staff, A&P personnel and technicians declined between 1969 and 1974. The change in number of technicians was closely tied to the change in number of research projects underway.

Faculty members were asked to indicate the primary effects on their graduate program of shifts in federal support for research and scholarship between fiscal 1969 and 1974. Forty-seven percent said that there was little or no effect on their graduate program. Forty-two percent reported negative effects of shifts in federal support for research. Lack of adequate graduate student support was the most common negative effect given. Without such support, it is difficult to attract top-quality students. And, if fewer graduate students are supported as research associates, fewer graduate students will have the opportunity to engage in research activities with the faculty.

Faculty members in the arts and humanities, in particular, noted that the elimination of the NDEA (National Defense Education Act) fellowship program not only reduced the number of graduate students supported but also eliminated the cost-of-education dollars that accompanied those fellowships. These unrestricted dollars had been used to support student and faculty research activities. Many faculty members commented on the unwanted strings attached to most federally funded research. Thus, the cost-of-education dollars had been ideal for many departments.

Some faculty members and department chairpersons suggested that reduced federal support did have beneficial effects on the graduate program. Mediocrity would be eliminated and the overall quality of the research program might be improved. Thus, students would experience and engage in higher quality research activities. In addition, it was argued that only those graduate students truly interested in learning would be motivated to apply to a graduate program.

Overall, changes in involvement with federally funded research were most strongly associated ($r=.88$) with changes in the following twelve institutional variables: (1) number of research associates, (2) university-funded equipment dollars, (3) number of federally supported graduate students, (4) university-funded salaries, (5) total university-funded dollars, (6) number of fellows and trainees, (7) part-time enrollments, (8) first-year enrollments, (9) number of university-supported A&P personnel, (10) number of university-supported technical personnel, (11) number of doctoral degrees conferred, and (12) number of federally supported A&P personnel. Approximately 42 percent of the variability among these graduate education and research variables can be accounted for by knowing the federal funding variables. In summary, those departments that experienced decreased involvement with federally funded research, except for federally funded travel, tended to experience a decline in the number of federally supported graduate students and technicians along with an increase in university support and in the number of part-time and first-year graduate student enrollments. The increased part-time graduate enrollments might be explained by the lack of financial support which could result in many students securing outside employment. However, it would be expected that the first-year enrollments would decline in these departments due to lack of funding. This picture describes several departments in mathematics and physical sciences in particular.

The results of this study indicate that departments, indeed, are differentially affected by federally funded research. Although several departments were not affected at all by changes in federal funding, changes in the graduate education and research variables did still occur in them over the five-year period. The nature of the research performed and, thus, the resulting involvement in federal research are the primary factors in determining the extent of the federal impact on graduate education and research conducted in a department. The variables included in this study were identified in the literature as being affected by federal funding of university research. In the future, data on the set of twelve variables which contributed the most to the canonical correlations should be collected over several years. The trends could then be determined for each variable and prediction equations could be generated. Then, perhaps, department chairpersons and college deans could design strategies for handling and adjusting to the negative effects while the positive effects of federally supported research could be maximized.

References

Dresch, S. Research, graduate education and the university. *The Educational Record*, Summer 1974, pp. 171–176.

Dressel, P. and Come, D. *Impact of federal support of science on the publicly supported universities and four-year colleges in Michigan*. Washington, D.C.: National Science Foundation, March 1969.

Girves, J. The impact of federal funding for university research on graduate education and research: A case study. Unpublished doctoral dissertation, Columbus: The Ohio State University, 1976.

National Board on Graduate Education. *Federal policy alternatives toward graduate education*. Washington, D.C.: January 1974.

National Science Foundation (NSF). *An analysis of federal R&D funding by function*. Washington, D.C.: U.S. Government Printing Office, 1975.

———. *Impact of changes in federal science funding patterns on academic institutions, 1968–70*. Washington, D.C.: U.S. Government Printing Office, 1970.

Orlans, H. *The effects of federal programs on higher education*. Washington, D.C.: The Brookings Institution, 1962.

Pusey, N. The Carnegie Study of federal government and higher education. In Dobbins (Ed.) *Higher Education and the Federal Government*. Washington, D.C.: American Council on Education, 1962.

———. Twenty-six campuses and the federal government. *The Educational Record* 1963, *44*(2), 137–144.

THE THREE-YEAR FINDINGS OF THE FLORIDA TECHNOLOGICAL UNIVERSITY TIME-SHORTENED DEGREE PROGRAM

D.R. Coleman
J.R. Bolte
Florida Technological University

Time-shortened degree program development and implementation has received an extraordinary amount of attention during the past six years. In 1971, the report of the Carnegie Commission on Higher Education entitled Less Time, More Options, provided the catalyst for change. The report spoke specifically of shortening the time required for the baccalaureate degree, first to three and one-half years and then to three years. Bersi (1973) reported that 243 colleges and universities were involved in time-shortened program activities by 1973.

A variety of reasons have been advanced to establish the need for and purpose of a time-shortened or three-year baccalaureate degree. These reasons include the following:

1. Assumed reductions in university costs, at least in terms of the cost per baccalaureate degree
2. Consideration of the time-shortened degree as a vehicle for educational reform since it will force a thorough study of both high school and university curricular offerings
3. The assumption that better articulation and cooperation between universities and high schools will occur
4. Reduced costs to the individual student and family in paying for a college education
5. The calloused observation from a governmental point of view that the time-shortened degree places an individual student into a salary earning environment and, therefore, on the tax rolls at an earlier time
6. The assumption that students are maturing at an earlier age and can handle the rigors of college level instruction at a faster pace or earlier age
7. The claim that senior high school and introductory university curricula consist of senseless and endless duplication of efforts which stifles student curiosity, enthusiasm, and interest.

Numerous attempts have been made to economize the time required to complete the curriculum leading to the baccalaureate, and a variety of reasons have been advanced to support the need for such a program structure. However, program evaluation, when it occurs, has been limited to assessments of grade point averages and success in college.

Purposes

The purposes of this paper are threefold:

1. To contrast the intellectual development of time variable degree participants with a control group of students who participated in the traditional program
2. To contrast the academic achievement of time variable degree participants with a control group of students who participated in the traditional program
3. To present the findings of a follow-up survey designed to assess the level of program satisfaction and perceived intellectual development of time variable degree and control group students.

Historical Overview

Both the structure and length of baccalaureate degree programs have undergone frequent scrutiny and change throughout the development of higher education in America. In the colonial period, college had a predominately religious orientation which served the aristocratic groups by training for a broad liberal culture and Christian piety (Brubacher & Rudy, 1968). Today's universities are essentially secular, address social issues, carry out scholarly research, and are equalitarian in nature. The nature of the collegiate environment has changed as the needs of society have changed. In the late nineteenth century, Clarence King reported that university requirements for entrance were similar to college graduation requirements of fifty years earlier (Brubacher & Rudy). Many colleges allowed students to matriculate at age fourteen.

The division between secondary schools and colleges has not been clear, and articulation has been in a constant state of flux. As the secondary school system improved at the end of the nineteenth century and the beginning of the twentieth century, content duplication became a problem.

Due to the overlap problem which had developed, educational leaders recommended various approaches to modify the baccalaureate program. In 1888, at a meeting of the National Education Association, President Eliot of Harvard suggested that economizing the time to complete formal education should be considered. He asked if the length of time could be shortened and if the program could be enriched. Later, Eliot proposed that the four-year baccalaureate be reduced to three (Brubacher & Rudy). By 1906, when the baccalaureate program reached its peak, 41 percent of the Harvard graduating class received their baccalaureate degrees in three years (Bersi, 1975). William Rainey Harper suggested that the eighth grade through sophomore year be accomplished in six years by the average and five years by the brilliant (Brubacher & Rudy). Other educational leaders wanted to make adjustments to college courses themselves. Although repeated attempts were made through the first decade of the twentieth century to economize the time to complete requirements leading to the baccalaureate degree, the proposals were not widely accepted by academia.

Other than the continuing expansion of the public junior college system and the adoption of the Carnegie unit, through 1950, only limited attempts were made to shorten the time to complete the baccalaureate degree requirements. In 1953, the Advanced Placement Program was developed. After Russia's Sputnik, a survey of manpower resources in the United States revealed that less than 50 percent of the students who graduated in the upper quarter of their high school class received baccalaureate degrees (Brubacher & Rudy). Therefore, the need to increase the proportion of academically capable students receiving the baccalaureate degree became essential. The Advanced Placement Program served as a tool to facilitate the accomplishment of this national need. It not only expedited the transition from high school to college but also fostered the upgrading of high school curricula. The current interest was precipitated by the rapid growth of higher education during the '60s and the financial constraints of the early '70s.

A report published in October 1973 by the American Association of State Colleges and Universities entitled Restructuring the Baccalaureate: A Focus on Time-Shortened Degree Programs in the United States revealed that 243 institutions were implementing some form of time-shortened educational activity on their campus. Of these programs, 73 institutions were either proposing, or were operating, programs which offered a major modification in the traditional four-year baccalaureate degree. A vast majority of the programs attempted to shorten the baccalaureate degree by eliminating the traditional general education requirements or replacing them with a modified program. However, only four institutions—Bellarmine College in Kentucky, Florida Technological University, Saint Francis College in Maine, and the University of South Alabama—awarded college credit on the basis of high school course achievement.

Florida Technological University Program

The Florida Technological University Time-Shortened Degree Program addressed the thesis that for the advanced student there is a needless duplication of effort among general education requirements of the university and closely related high school courses. During 1973, the program was limited to 108 first-time-in-college students who had a Florida Twelfth Grade Test score of 400 or higher (80th percentile or higher) and who had an academic grade point average of 3.0 or higher. Students were interviewed by an academic counselor to identify those courses for which university credit would be awarded. Credit was awarded for selected high school courses in which grades of B or higher had been earned. For example, if a student completed four semesters of English composition during his or her three years of high school with a final semester average of B or higher, the student would receive four quarter credit hours in basic English composition at the university. Table 1 provides a list of the courses for which credit was awarded and shows the number of students who received credit in each area.

Population. The population for this evaluation consisted of 108 time-shortened degree participants from the 1973 new-entering freshman class and 86 students selected as a control group from the 1972 new-entering freshman class. Although the time-shortened degree group and control group were not matched groups, they were similar in both academic potential and intended college major. The two groups had similar high school academic records, Florida Twelfth Grade scores, and initial discipline choice. The control group did not receive advanced placement since advanced placement was used only minimally during 1972 and 1973.

Methodology. The research design contrasted the development of the time-shortened degree group with a control group which had been selected from the previous new-entering freshman class. The Undergraduate Program Area Test, Undergraduate Aptitude Test, and the Watson-Glaser Critical Thinking Inventory were used to compare the intellectual development of the two groups. The academic achievement analysis was completed by comparing the overall college grade point average and the retention profiles by enrollment category for the two groups. In addition, an analysis was completed of the grades awarded during the first two quarters to time-shortened degree students in courses for which prerequisite credit had been awarded on the basis of high school achievement.

A follow-up survey was completed in February 1977 which was designed to assess the level of program satisfaction and perceived intellectual development by group.

Presentation and Analysis of Data

The comparison of the achievement records and retention ratios revealed that the time-shortened degree group was at least as successful as the control group. Furthermore, the data indicated that time-shortened degree students maintained relatively high grade point averages even though many waived the prerequisite requirement for advanced courses.

Table 1

Number of Time-Shortened Degree Students
Receiving Credit, by Subject Area,
Fall 1973

Subject area	Total
Communication	
English	78
Speech	11
Engineering	
Engineering Graphics	5
Humanities	
American history	73
World history	22
Humanities	21
Languages	64
Mathematics	
Introductory algebra	59
College algebra	24
Trigonometry	40
Analytical geometry	24
Calculus I	4
Natural Science	
General biology	76
General chemistry fundamentals	65
College physics	39
Social Science	
American national government	19
General sociology	15

Intellectual development. The testing program revealed substantial differences between group means for 4 of the 6 areas of assessment. Table 2 provides a summary of the measures of central tendency and dispersion of each test area by group.

At least nine-tenths of the time-shortened degree group and approximately one-third of the control group participated in the testing program. The control group members who participated in the testing program were representative of the overall control group in terms of academic potential as measured by the Florida Twelfth Grade Test (Coleman & Kamrad, 1974).

A comparison of the group means for the verbal scale revealed a difference of 43.4 points. The null hypothesis of no difference between the population means was rejected at the .05 level of significance. This may imply, in general, that students who participate in the traditional general education program have a higher verbal aptitude at the beginning of their second year, as assessed by the undergraduate test, than do students who receive advanced placement and exempt a majority of the general education courses. The comparison of the quantitative aptitude mean scores for the two populations did not reveal a statistically significant difference at the .05 level of significance.

The comparison of the area mean test scores revealed a difference of 71.6 points in the humanities area, 51.1 points in the natural science area, and 61.3 points in the social science area. The null hypothesis of no difference between the two population means was rejected at the .05 level of significance in each case. These findings may be interpreted, in general, to mean that students who complete the traditional first year of

Table 2

Summary of Undergraduate Program Test and Watson-Glaser Inventory Results, Fall 1973

Test area	Time-shortened degree group			Control group		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Undergraduate program aptitude						
Verbal*	106	482.0	85.8	30	525.4	95.2
Quantitative	106	573.9	92.2	30	590.2	80.1
Undergraduate program area						
Humanities*	103	447.2	64.6	26	518.8	73.1
Natural science*	103	548.5	78.2	26	599.6	90.4
Social science*	103	442.5	71.1	26	503.8	101.1
Watson-Glaser						
Critical thinking	98	77.9	8.5	21	79.5	7.6

*There was a statistically significant difference between the level of achievement for the two groups at the .05 level of significance.

college have a broader scope of knowledge in the humanities, natural sciences, and social sciences than students who receive advanced placement and waive these requirements. Since academically capable students at the university enroll directly in courses offered for majors rather than the traditional general education courses, the difference between the natural science group means may not be attributable to participation in the traditional general education curriculum.

A comparison of the group mean scores for the Watson-Glaser Critical Thinking Inventory revealed a difference of 1.6 points. This difference did not represent a statistically significant difference at the .05 level of significance. One of two conjectures may be drawn from these findings. Either critical thinking is not being taught in university general education courses or critical thinking is being taught, but the ability to apply these competencies does not develop until the student has had the opportunity to apply the techniques in the last three years of the baccalaureate curriculum.

Academic achievement. The three basic areas addressed by this section include overall grade point average analysis, retention analysis, and impact of waiving prerequisites. Table 3 provides a summary of the distribution of the enrollment of time-shortened and control group students by group, enrollment category, and overall grade point interval. The data

Table 3

Distribution of Time-Shortened Degree and Control Group Students by Enrollment and Grade Point Average Category

Group and enrollment category	WP[a]	1.5	1.50–1.99	2.00–2.49	2.50–2.99	3.00–3.49	3.50–3.99	4.00	Enrollment total
Time-shortened degree									
Enrolled				3	17	17	7		44
Not enrolled									
<90 hrs			1	1	3	1	1		7
≥90 hrs and <135 hrs			3	1	7	3	1		15
≥135 hrs						1	1		2
Graduated					6	16	15	3	40
Group total			4	5	33	38	25	3	108
Control group									
enrolled			1	3	4		5		13
Not enrolled									
<90 hrs	1	1	1	9	4	3	5		24
≥90 hrs and <135 hrs					4	1	1		6
≥135 hrs									0
Graduated				4	5	19	15		43
Group total	1	1	2	16	17	23	26	0	86

[a] withdraw passing

revealed that 61 percent of the time-shortened degree group and 57 percent of the control group attained a B average or above. The null hypothesis of independence using a Chi-square analysis for group totals was not rejected at the .05 level of significance. This would imply that grade point average is not dependent on group. The null hypothesis of independence on the enrollment category totals was rejected at the .05 level of significance. These data revealed that enrollment category was dependent on group. A detailed analysis of these data revealed that a greater portion of the control group had graduated, a greater proportion of the control group dropped out prior to completing 90 quarter hours, and a greater proportion of the time-shortened degree group were still enrolled. The data seems to indicate that participation in the Time-Shortened Degree Program does not accelerate students by one complete year. However, participation in the Time-Shortened Degree Program may decrease student attrition. The percentage of students who either transferred or dropped was only 22.2 percent for the time-shortened degree compared to 34.9 percent for the control group.

Table 4 provides a comparison of the overall grade point average and standard deviation by enrollment category for the two groups. These data revealed that the overall grade point average was the highest for each graduate subgroup. A comparison of the group means revealed that the overall average for the time-shortened degree group was higher than the control group mean in each category.

A statistical analysis in which the null hypothesis of no difference between population grade point averages by category was completed. In each case the null hypothesis of no difference was not rejected at the .05 level of significance. These findings would indicate that participation in the Time-Shortened Degree Program does not affect one's overall grade point average.

Table 4

Average Grade Point Average and Standard Deviation by Group and Category

Category	Time-shortened degree group		Control group	
	$\bar{y}$	s	$\bar{y}$	s
Graduated	3.430	.366	3.284	.453
Enrolled	3.076	.434	2.963	.669
Dropped	2.793	.576	2.765	.779

Table 5 provides a summary of the grades received by the time-shortened degree students in more advanced courses during their first two terms of attendance, after being awarded credit for the prerequisite course. These data indicate that more than 34 percent of the students received A's, about 38 percent received B's, and only 6 percent received less than a C. Of the 13 grades which were below C, 9 were in mathematics. These data seem to indicate that the time-shortened degree participants were able to do satisfactory work in the more advanced courses after having received credit based on high school achievement in the prerequisite course(s).

Survey findings. The follow-up survey revealed, in general, that both groups made considerable progress toward meeting their educational and professional goals. Likewise, participation in the Time-Shortened Degree Program did not appear to hinder those students who applied to graduate and professional schools. Sixty-one percent of the time-shortened degree group and 27 percent of the control group responded to the survey.

Table 6 provides a summary of the highest degree expectation by group. The null hypothesis of independence, using a Chi-square analysis, was not rejected at the .05 level of significance. These findings indicate that highest degree expectation is independent of group.

Table 5

Number of Grades Received in Advanced Courses
for which Prerequisite Credit Was Waived,
by Course Area,
Fall 1972 and Winter 1973

Highest level awarded	Achievement in more advanced or related courses					
	A	B	C	D	F	W
Humanities & fine arts						
English 101–103	3	6	1			
History (American & Western Civilization)	2	2	2			
Speech 101	0	4	1			
Language 100	4	7	4			
Natural science						
Math 104	10	9	7		$1/{}^{R^a}_{C}$	
Math 106	5	2	4	$1/{}^{R^a}_{C}$	1	
Math 111	22	14	10	1	1	
Math 211	7	12	5	3	$1/{}^{R^a}_{C}$	
Math 321	2	3	1			
Biology 100–103	7	9	4	2		
Chemistry 101–2–111	8	11	7	2		
Social science						
Sociology 201	2	1				
Total	72	80	46	9	4	

[a]Designates courses repeated and grades awarded.

Table 6

Highest Degree Expectation
by Group

Degree level	Time-shortened degree		Control	
	Number	Percent	Number	Percent
Baccalaureate	19	29	5	21
Masters	33	50	12	50
Professional	6	9	2	8
Doctorate	8	12	5	21

Table 7 provides a summary of the number of graduate or professional school applications filed and the number of acceptances by group. These data revealed that although very few students had applied to graduate or professional schools, they were very successful in obtaining acceptances. When the time-shortened degree students were asked if participation in the program affected their acceptance status, three students reported that it favorably affected their status, and the remainder reported that it had no impact.

Table 7

Number of Graduate School Applications and Acceptances by Group

Group	Number of applications filed			Number of acceptances		
	1	2	3	1	2	3
Time-shortened degree	10	5	6	12	4	5
Control	6	1	3	6	2	2

Table 8 provides a summary of how the participants perceived their experience at Florida Technological University in several areas of academic or social development. These data revealed that a vast majority of students from both groups perceived their experience at the university as an important contribution to their intellectual or cultural growth development. However, a greater percentage of time-shortened degree students indicated that their experience contributed only a small amount. A null hypothesis of independence using the Chi-square analysis was tested for each area after the little progress and moderate progress columns were combined. The quantitative area null hypothesis was rejected at the .05 level of significance. This would imply that the control group perceived their university experience as contributing more toward the development of this competency. The remaining null hypotheses were not rejected at the .05 level of significance. When the time-shortened degree participants were asked direct questions about

Table 8

Summary of Program Contribution in Selected Areas, by Group

Item	Time-shortened degree group				Control group			
	Little progress	Moderate progress	Much progress	Very much progress	Little progress	Moderate progress	Much progress	Very much progress
Intellectual growth: Your ability to understand and use concepts and principles from several broad areas of learning	2	13	36	15	0	7	14	3
Social growth: Your understanding of other people and their views; your experience in relating to others	8	25	19	14	2	6	6	10
Aesthetic and cultural growth: Your awareness and appreciation of literature, music, art, and drama of your own culture and of others	18	26	11	8	3	8	10	3
Reasoning ability: Recognizing assumptions, making logical inferences, and reaching conclusions	1	27	23	14	0	5	14	3
Critical thinking: Ability to withhold judgment, raise questions, and examine contrary views	4	24	23	14	1	4	12	7
Quantitative thinking: Understanding concepts of probability, proportion, margin of error.*	14	26	14	11	1	4	14	4
Writing and speaking: Clear, correct, effective communication	9	28	19	9	3	10	9	2

*There was a statistically significant difference at the .05 level of significance.

the value of the program, they overwhelmingly reported that it was an outstanding program and did not hinder their development. Likewise, they reported they would recommend it to any student who had a similar background.

Conclusions

The findings of the study indicate that both the time-shortened degree and control groups were successful in achieving their academic goals. Mean scores of the control group on the Undergraduate Program Test were greater than scores of the time-shortened degree group in the verbal aptitude and area tests at the beginning of the program. No difference was observed in either the quantitative aptitude section or the Watson-Glaser Critical Thinking Inventory means for the two populations. Although the graduation rate was higher for the control group at the end of three years, the overall attrition rate for the time-shortened degree group was lower. The time-shortened degree group was very successful in courses for which prerequisite credit had been awarded and attained at least as high an overall grade point as the control group. Both groups perceived the university experience as making a substantial contribution to their overall intellectual and social development. However, a larger proportion of the control group expressed reservations about the value of their university experience in contributing to the intellectual and cultural development. Direct program evaluation questions evidenced nearly complete satisfaction with the Time-Shortened Degree Program.

Since a majority of the time-shortened degree group did not graduate in the three-year period, additional research will have to be completed before conclusive evidence can be provided about the overall effectiveness of the Time-Shortened Degree Program.

Bibliography

Bersi, R.M. Restructuring the baccalaureate: New patterns and old campaigns. *The Education Digest*, February 1975, *40*, 43–46.

Bersi, R.M. *Restructuring the baccalaureate: A focus on time-shortened degree programs in the United States*. Washington: American Association of State Colleges and Universities, October, 1973.

Brubacher, J.S., & Rudy, W. *Higher education in transition*. New York: Harper & Row, 1968.

Carnegie Commission of Higher Education. *Less time, more options: Education beyond high school*. New York: McGraw-Hill, January 1977.

Coleman, D.R., & Kamrad, D.R. The preliminary findings of the Florida Technological University time-shortened degree program. Paper presented at the Seventh Annual Invitational Conference on Institutional Research, Jacksonville, FL, July 1974.

PLANNING AND HIGHER EDUCATION IN BRAZIL

Thomas E. Croope
Federal University of Parana, Brazil
Louis C. Vaccaro
Colby-Sawyer College

The explosive and dramatic growth which has characterized the development of the Brazilian economy since the mid 1960s has been labelled *the miracle*. Yet, even those persons who are most laudatory of such growth are also aware of the problems and obstacles which have accompanied this boom. Brazilian higher education—indeed, the entire educational system—has not escaped some of the problems resulting from this growth. Inadequate physical facilities, too few qualified faculty, and underdeveloped libraries are some of the problems that plague the orderly growth and development of Brazilian education. In higher education, especially, we can say with accuracy that most of these difficulties have resulted from a scarcity of accurate statistical data which, in turn, makes educational planning difficult to accomplish.

A recent publication by the Carlos Chagas Foundation of Sao Paulo states:

> During the last decade, educational planning has had a strong impact on the Brazilian educational system . . . The Ministry of Education (Ministerio da Educacao e Cultura, 1974) points out that in the early stages of development of educational planning, one of the greatest difficulties was the scarcity of information about the educational system. The same publication characterizes the present stage by two main efforts: (a) to solve the most crucial problems; and (b) to develop a better information system. It is explicitly recognized that much research and evaluation is needed to support the continuing development of educational plans. (Bessa, 1976, p.17)

Before delving further into the origins and details of this problem, we should first provide some background about the Brazilian system of higher education.

Background

The early 1960s signalled the end of a period of long pedagogical debate resulting in the approval of the Law of Directives and Bases of National Education. The adoption of these directives ushered in a new period of university reform. Born out of a compromise between two opposing philosophies, the Law of Directives and Bases of Education was, in effect, a synthesis of antinomies. It was this reform which made possible the development of the comprehensive integrated university, the movement toward which comprised three distinct phases: (a) implementation of the University of Brasilia, (b) the university reform movement, and (c) implementation of the reform on a general scale.

While the reform was well received, it had no immediate impact on the expansion of higher education. It was the student unrest and public pressure for expansion of higher education that pushed the government to create a task force to expedite the university reform.

The work of the task force for the reform of the university constituted the second phase of the reform movement. The basic philosophy of this working group can be summarized as follows: university reform must, in the opinion of the working group, fulfill its primary function of accepting the role as a pre-investment in the development effort (Abu-Merhy, 1971).

Following is a brief description of the new structure of Brazilian higher education. According to a 1974 report of the Ministry of Education and Culture, the guiding principles of the present university reform are the following:

1. The principle of no duplication of means for identical or equivalent ends in order to permit full utilization of available resources
2. The principle of structural and functional integration of research and teaching within the university
3. The adoption of the departmental system
4. The concentration of basic, scientific, and humanistic studies in an integrated system of units (centers or facilities) for the service of the whole university
5. The organization of a first cycle of basic studies common to all courses or groups of related courses.
6. The creation of a superstructure of graduate courses (Sucupira).

The real and dramatic expansion of Brazilian higher education started in the 1960s, when the Law of Directives and Bases of Education permitted the creation of private institutions of higher education. As a result, in 1973 there were 797 institutions, of which 57 were universities, 3 were federations of schools, and 712 were "isolated schools." By type of control, these institutions were distributed as shown in Table 1.

Table 1

Number of Institutions of Higher Education in Brazil, 1973

	Federal	State	Municipal	Private	Total
Universities	29	7	1	20	57
Federations of schools	1	. . .	. . .	2	3
Isolated schools	16	74	75	547	712
Extensions	25	. . .	. . .	. . .	25
Total	71	81	76	569	797

Note: From "Emerging Structures of Higher Education and the Community College Concept: Implications for Brazilian Higher Education," an unpublished doctoral dissertation by J.C. Dos Santos, Filho, University of Southern California, 1974. Used by permission.

Another result of the reform has been a dramatic shift in emphasis from elitist to mass higher education in Brazil.

As Jose Camilo Dos Santos (1974) points out:

> While in 1963 only 13 out of a thousand students who entered the school sustem registered in higher education, in 1973 there were 63 out a thousand entering higher eduacation. While, in 1965 the index of students in

higher eduction for a population of a hundred thousand people was 2 percent, in 1973 that index rose to 7 percent. (p. 148)

The magnitude of this expansion is best realized when one studies the enrollment growth which has occurred during the last three decades.

Table 2

Growth of Student Enrollment in Brazil from 1940 to 1974

Year	Student enrollment
1940	23,000
1950	44,000
1960	93,000
1970	425,000
1973	836,000
1974	1,018,000 (estimated)

It is not only this rapid growth in enrollment that has made planning difficult. There is another, more important, reason: poor methods of data collecting. Educational data is collected and analyzed primarily so that it can be used to improve the processes of administration, planning, and decision making which, in turn, assist in the improvement of education.

The lack of proper methods for data collection in Brazil results, in large part, from the attitudes of educational administrators (who are not accustomed to having timely and pertinent information available to serve them and who generally do not think in terms of the role that such information could play in their decisions).

Obviously, the relationship between the gathering and development of educational information and its use in planning and decision making is one which can be resolved only in part by improvements in the information system itself. Operation of the Brazilian education system needs to be considered as a whole, including all levels and types of education, both formal and informal methods of delivery, and both public and private sectors. Also, the inputs to,and production from, these areas need then to be related to the economic and social needs for training and for other education-based characteristics of the population. Well-organized and reliable information can serve to improve and strengthen education, but not without full use of that information in the management of the system. The planned development of Servico de Estatistica de Educacao e Cultura into a national education information system is thus a hopeful development. However, to be effective, it must be linked with research, economic planning, and a more coordinated operation of the entire education system.

The following brief account of one federal university's efforts to develop and implement master degree programs is intended to illustrate some of the obstacles that stand in the way of proper planning of such programs.

Case study

In May of 1974, the School of Education of the Federal University of Parana began planning and developing its first graduate program. Major responsibility for this task was assigned to an elderly professor who held the degree *Livre Docente*. He was assisted by others of like training and experience, none of whom had master's or doctor's degrees or taught graduate-level courses.

Initial efforts toward curriculum development were haphazard. Advice of available curriculum specialists was not sought, programs or courses were not based on labor market surveys or job analyses which would indicate the type of graduate desired nor was adequate attention given to the National Plan for Graduate Education. Instead, the two curricula developed were based on the personal experiences of certain individuals, the courses (disciplines) that could be offered by present, local faculty, and the heavy interest placed at that time, throughout Brazil on planning. The two areas of the graduate program selected were (a) teaching methodology and (b) educational planning.

The lack of understanding of what graduate education involves and the lack of sufficient academic and technical planning assistance in preparing the graduate program were quickly noted, primarily by the younger professors (with master and doctoral degrees from the USA and Europe) who were called in later to serve as assistants to the Livre Docentes. Several probable obstacles to implementing the graduate program and obtaining accreditation from the Federal Council of Education were cited by the younger professors. Most important among them were (a) an inadequate library collection, (b) an insufficient number of Ph.D.'s and (c) the existence of similar programs in several other Brazilian universities.

Even though these implied suggestions for improvement went unheeded, consultation was sought in April of 1975 from appropriate federal agencies for the formal request for accreditation. At that time, it was once again pointed out that several other federal universities were offering similar programs, that the present quality of the faculty needed strengthening, that the library was insufficiently specialized, with too few holdings, and that certain support conditions (equipment, facilities, and secretarial assistance) needed improving. It was suggested that the School of Education reconsider its plans. In the meantime, classes continued to be held.

In May of 1976, federal agencies offered to furnish substantial funds for the improvement of the above-noted deficiencies if the School of Education were willing to develop a major in "curriculum" for which there was great need in Brazil. The suggestion and offer were accepted, and as a result, technical agreements were prepared which enabled the school to obtain the equivalent of approximately $75,000 for equipment, materials, and serial publications (the money to be spent within one year). A similar amount was obtained for the contracting of new professors during the period of July to December 1976. Additional salary funding provided for an additional five Ph.D.'s, two Livre Docentes, and two Ph.D. candidates.

Also, during 1976, and with needed assistance provided by faculty with foreign degrees, the graduate program statute was entirely reworked with the intent of strengthening the program, adding a new program in curriculum and adding several new faculty members. Subsequently a new program-directing body was elected and a new request for program accreditation was prepared and submitted to appropriate officials for approval.

It is expected that the new program will continue to function normally in 1977. The intention in 1977 is to begin planning for the development of a second major area of graduate study in 1978–79. Hopefully, adequate planning and survey data will be utilized so that the programs more closely approximate the local and national needs.

Discussion, Conclusion and Recommendations

Recent past and present efforts by the Brazilian Ministry of Education and Culture and the related semi-autonomous institutions have provided an ever more centralized viewpoint of needs and coordinated planning efforts through which it is expected that education can maximize its contribution to national development. During the past two or three years, federal funds for education have increased rapidly, keeping pace with the government's belief in the role of education in national development. In fact, among all ministries, the budget for the Ministry of Education and Culture increased the most—doubling from 1976 to 1977.

However, the federal, state, and private universities, by and large, still continue to develop new graduate programs largely on the basis of individual professors' interests, even though many of them lack the abilities and understanding of what graduate education is all about.

Such actions are in violation of one of the directives of the National Plan for Graduate Education, which emphasizes the need for a coordinated expansion of graduate education programs and which states that the expansion of the system not be prejudiced by personal or institutional initiatives that do not coincide with national priorities.

Initially, the Ministry of Education made no concerted attempt to compel universities to follow ministry-level planning. Consequently, individual professors and institutions continued to create or expand programs having inadequate program structure (libraries, laboratories, equipment, staff support, etc.) and insufficient numbers of qualified professors. The National Council for Graduate Education, therefore, passed a resolution requiring that financing of new programs or the expansion of existing programs can only follow preliminary approval by one of the council's technical coordinating groups. Hence, to obtain federal financing today for graduate education, a series of forms justifying the creation or expansion of a program, guaranteeing the continuance of the program for at least three years, and setting forth a program for faculty upgrading must be submitted at least 180 days prior to the projected date for initiating graduate program activities.

There continues to be a lack of adequate communication between the federal coordinating agencies and the universities and the professors involved in the programs. Moreover, much of what is communicated goes unheeded at the lower levels and underscores the need for more effective two-way communication.

Another interesting point to consider is financing. In the past, plans for program development were made and funds promised. But, in many cases, the financing did not materialize. Therefore, in the early phase of program development, there was a general pessimism about receiving any funds and, therefore, little desire or interest in planning for them. As a consequence of the present availabilty of government funds and present understanding or program planning and execution, there is now the odd circumstance of having, or being able to have, funds and not knowing how to use them well.

In an attempt to clarify and begin remedying some of the major problems which have beset graduate program development by discussing mutual development problems, a nationwide seminar of graduate school deans and ministry personnel was held in December of 1976. The implementation of the Institutional Plan for Faculty Training was another positive step taken in 1976 toward upgrading and completing graduate program faculties which, in turn, have provided a much stronger basis for supporting research on the graduate level.

If graduate-level programs are to grow and develop properly, planning must first be improved and regularized.

The authors believe the following four major suggestions would bring about the necessary improvement:

1. Some formal, regular means of communication (newsletters, meetings, and/or other forms of communication) ought to be established—vertically between the ministry and its related agencies and the universities, and horizontally among the appropriate university personnel—to keep all involved in planning graduate programs fully informed.
2. A series of regularly scheduled training programs/seminars, accompanied by the distribution of pertinent technical materials, should be offered to all those responsible for planning and developing graduate programs within the federal universities.
3. A ministry-level, or ministry and its related agencies, technical aid service should be offered, either on a regular or on-call basis, to assist those responsible for planning individual graduate programs or university graduate education systems.
4. A series of regularly programmed, vertically and horizontally focused planning sessions should be built on the above three activities. Such activities would not only provide a better insight into, and acceptance of, overall and detailed planning but would promote a constant coordination of graduate program planning.

Failure to find solutions to the problems referred to in this paper will lead to more serious difficulties and will further impede the development of needed planning efforts.

References

Abu-Merhy, N.I. Emerging national policies for higher education in Brazil. In B. Holmes and D.G. Canlon (Eds.), *Higher education in a changing world: The world yearbook of education, 1971–72*. London: Evans Brothers Ltd., 1971.

Bessa, N.M. *University entrance examinations in Brazil: Measurement procedures*. Sao Paulo, Brazil: Fundacao Carlos Chagas, 1976.

Dos Santos, J.C., Filho. *Emerging structures of higher education and the community college concept: Implications for Brazilian higher education*. Unpublished doctoral dissertation, University of Southern California, 1974.

Fundacao Instituto Brasileiro de Geografia e Estatistica—IBGE, Directoria de Divulgacao. *[Statistical abstract of Brazil]*. Rio de Janeiro: Author, 1975.

Gall, N. The rise of Brazil. *Commentary*, January 1977, pp. 45–55.

Human Resources Office—USAID/BRAZIL. *Brazil education sector analysis*. Washington, D.C.: Author, 1972.

Ministry of Education and Culture. *New perspectives for the system of higher education: Coordination for training higher education personnel (CAPES)*. Brasilia: Federal District, Department of University Affairs, 1976.

Sucupira, N. *Aspectos da organizacao e funcionamento da educacao Brasileira*. Brasilia: MEC-Departamento de Documentacao e Divulgacao, 1974.

RESEARCH AND PLANNING THROUGH DEPARTMENT/PROGRAM REVIEW: A UNIVERSITY'S EXPERIENCE

Joseph L. Gubasta
The University of Utah

The purpose of this paper will be to describe the development and use of a department and program review process employed at the University of Utah. This process was designed to identify issues and problems of planning and management as well as to consider their impact on resource use and was intended to produce information in a form useful to institutional managers (executive officers, deans,and department heads) as they make resource allocation decisions. The activities of university planners and institutional researchers as they supported the review process will be given special emphasis.

Before proceeding, it seems appropriate to define the concept of a review. A review, whether program or department, is a process of collecting, analyzing, and integrating a variety of data elements in order to focus attention on program or unit performance and policies directly related to enrollment, personnel, funding, work load, and course and degree offerings. In other words, a review process provides an objective macroanalysis of department or program policies and practices that require a closer look as well as providing clues as to which departments or programs may be candidates for resource enrichment or reallocation.

The Review Process

The planning and budgeting processes provide instances where the availability of department or program review information can influence decision making. Several years ago, staff in the University of Utah's Academic and Financial Planning Office felt that they could improve their service to institutional managers by initiating a review process intended to accomplish the following objectives:

1. University decision makers would be provided with timely planning and management information obtained from central data sources.

2. Significant trends in specified areas of university operations would be highlighted.

3. Attention would be focused on specific problems and policy issues.

4. A medium for familiarizing decision makers with the use of management information would be provided.

To achieve these objectives, it was necessary to employ several strategies and to initiate a variety of actions.

A. Review considerations. The decision to initiate an ongoing centralized review process was preceded by consideration of seven questions.

1. Who are the primary actors in determining the allocation of institutional resources?

2. What formal and informal processes are employed to arrive at planning and resource allocation decisions?

3. What role does data analysis play in department, college, and institutional planning and budgeting decisions?

4. What amount of staff effort is devoted to the preparation of planning and management information?

5. Are planning and budgeting data available when needed by decision makers?

6. Do planning and budgeting data portray trends in such areas as enrollments, course and degree offerings, personnel, work loads, and funding?

7. Are planning and budgeting data analyzed and provided to decision makers with commentary?

Answers to these questions helped to determine whether an ongoing department or program review process was needed. The answers also provided clues as to how such a process could effectively improve managerial decision making.

B. Data considerations. The review process was designed to focus attention on unit performance and policies through the display of management information. The preparation of management information involved defining, collecting, interrelating, evaluating, analyzing, and interpreting data to assist decision makers in addressing the issues and problems of planning, organizing, and controlling. The need to take each of these items into consideration during the process of preparing review information caused numerous problems and challenges for the academic and financial planning staff. For example, data elements considered as appropriate descriptors resided in a variety of data bases which were developed to satisfy the operational day-to-day needs of specific administrative units. Since the stewardship function of administrators varied significantly from the planning, organizing, and controlling functions performed by managers, preparers of review data had to identify the weaknesses and idiosyncrasies of operational data before such data could be processed. Below are several examples of issues and questions staff planners encountered when considering data elements for review purposes:

1. Student credit hour data can be reported in a variety of ways, e.g., by course level, by student level, and by a combination of the two. Which way is most meaningful?

2. Full-time equivalent student and faculty calculations can be derived in numerous ways. What criteria should be employed? Can this criteria be applied uniformly within the institution?

3. The accuracy of student and course data is dependent on the admissions and registration processes and systems. Where do the holes exist in these systems? What problems are created through automation of these reports?

4. Financial data can be reported using actual expenditures or budgeted amounts. Which reporting method will provide timely, yet comparable, data?

5. Is it possible to obtain an accurate count of regular and part-time students and faculty?

6. Can the institution identify which graduate assistants and fellows actually have course-related responsibilities and which do not?

7. When should the snapshot be taken for each type of data? What reconciling problems will be created when these time frames vary?

8. Is it possible to implement a data crosswalk between the institution's organizational structure and Higher Education General Information Survey (HEGIS) disciplines?

The academic and financial planning staff were also concerned that review information mirror organizational and program units as clearly as possible. It is especially important to check this when computers are programmed to perform much of the data integration and manipulation. This point prompted consideration for the evaluation of review information prior to its use by decision makers. By employing computer technology and software packages to generate management information, institutional personnel have increased their ability to produce an overabundance of data. However, the utility of such data is questionable unless its accuracy is verified. Therefore, preparers of review data must define their expectations regarding data accuracy and utility. The academic and financial planning staff responded by posing questions about data validity and reliability to those who maintained each data system that supported the review process. In addition, these administrators were asked to "signoff" on data derived from their data bases before it was distributed to academic units.

A final consideration regarding data preparation concerned the fact that few academic deans and department heads have the time or desire to review volumes of data. Therefore, data synthesis and interpretation become indispensible elements in the review process. The planning staff in the Academic and Financial Planning Office saw their role and task as one of translating numbers into information that academic administrators could use.

With these considerations in mind, the data elements and their uses, (as listed in Table 1) were those employed by the academic and financial planning staff for inclusion as the primary department and program review data.

C. Data display. After data elements were selected, an appropriate display format was designed to aid in their collection, integration, and analysis. The major sources of data included: registrar's reports of enrollment, credit hours, and degrees conferred; budget and financial reports; instructional staff and salary summaries of the American Association of University Professors (AAUP); instructional work load and other activity data. Most of the compilation work involved transfer of data elements from standard reports (some computerized) and documents to a four-page summary format designed for the project (see figures 1 and 2). These data formats served to display review data for the three groups of institutional decision makers: executive officers, deans, and department heads.

D. Data analyses. In addition to supplying decision makers with trend data, planning staff also performed analyses which centered on such topics as course and section proliferation, faculty activity and instructional productivity, the replacement of teaching assistants with regular faculty to improve undergraduate education, the magnitude of instructional service to departmental majors versus other university majors, and class size analyses.

These summaries, including written analyses, helped to highlight significant trends and issues of concern to executive

Table 1

Department and Program Review
Data Elements and Their Uses

Data element	Uses
Credit hours	Measure of instructional service by course level Source for FTE student enrollment Instructional work load productivity ratio Instructional work load matrix Enrollment projections Student/faculty ratios
Budgeted FTE faculty	Measure of budgeted salary support Instructional work load productivity ratio Average salary information Student/faculty ratios
Headcount faculty (regular only)	Measure of budgeted salary support Percent tenured
Budgeted FTE teaching assistants	Measure of instructional support staff Average salary information Ratio of teaching assistant FTE as percent of faculty FTE
Budgeted salaries (regular faculty & TA/TF)	Average salary information by rank
Total funds	Measure of total financial support
General operating funds	Measure of state support
Other funds	Measure of non-state support Ratio of other funds as percent of total funds
Course contact hours	Measure of total instructional service
Section offerings (fall quarter)	Measure of instructional service by course level
Degrees conferred	Measure of instructional output

		College A	Department 1	Department 2	Department 3	Department 4
Enrollment: Total student credit hours (SCH) (extended day, academic year, SCH, excluding honors program)	1972–73					
	1973–74					
	1974–75					
	1975–76					
	% change					
	estimated 1976–77					
SCH by level 100–299	1972–73					
	1973–74					
	1974–75					
	1975–76					
	% change					
	estimated 1976–77					
300–499	1972–73					
	1973–74					
	1974–75					
	1975–76					
	% change					
	estimated 1976–77					
500–599	1972–73					
	1973–74					
	1974–75					
	1975–76					
	% change					
	estimated 1976–77					
600–799	1972–73					
	1973–74					
	1974–75					
	1975–76					
	% change					
	estimated 1976–77					

Figure 1. Enrollment data elements and display format for use in college and department review.

officers, deans, and department heads. Since the planning and budgeting needs of executive officers varied somewhat from those of academic unit heads, a separate data analysis was performed for each group.

E. Marketing. With completion of the data analysis phase of the review process, attention turned to the assembly of the analyzed data into a Planning and Budgeting Guide and its distribution to appropriate decision makers. Actually, two versions of the guide were prepared: one for executive officers reflecting their needs and one for use by deans and department heads.

The guide was packaged in a looseleaf binder to facilitate additions, deletions, and updates of the materials. It was organized as follows:

I. Introduction and Table of Contents
II. Policy Issues and Data Analyses—A Synopsis
III. Review of Academic Units/Programs
IV. Historical and Projected Enrollments
V. Department Information Exchange
VI. Appendixes
  A. Summary of College Expenditures by Fund Source
  B. Employment Outlook for Graduates
  C. Source of Data Elements

Since a major objective of the review process was to familiarize decision makers with the use of management information at a time when it would be useful to them, distribution of the guide became a major concern. The strategy employed by the academic and financial planning staff was to include the guide with the budget request worksheets and total dollar allocations sent to deans and department heads shortly after the university received its state appropriation. In addition, the guide was reviewed with deans on an individual basis and, one year, collectively at a regular meeting of the council of deans chaired by the vice president for academic affairs.

Executive officers received copies of the guide shortly after the deans and well before the review of department and college budget requests. Each executive officer was given a private orientation to the guide to ensure that he or she understood its contents, its potential utility, and its shortcomings.

F. Benefits. Reflection on the process of preparing department and program review information indicates that the following benefits have been derived:

1. The academic and financial planning staff interest in providing planning and management information provided a forum for discussion of issues and concerns with a variety of university decision makers.

2. The staff were challenged to carefully consider data availability and utility, display formats, and analyses to be performed before plunging into the task of data collection.

FACULTY:	
FTE (budgeted)	
Academic year	1972–73 1973–74 1974–75 1975–76 1976–77 % change
Summer	1972–73 1973–74 1974–75 1975–76 1976–77
Head count	1972–73 1973–74 1974–75 1975–76 1976–77
Tenured (no. & %)	1973–74 1974–75 1975–76 1976–77
Auxiliary	1974–75 1975–76 1976–77
FTE teaching assistants/ teaching fellows (TA/TF)	1972–73 1973–74 1974–75 1975–76 1976–77
TA as a % of faculty FTE	1972–73 1973–74 1974–75 1975–76 1976–77

FACULTY (cont.):	
Average faculty salary	1972–73 1973–74 1974–75 1975–76 1976–77 % change
Average TA/TF salary (.50 FTE)	1975–76 1976–77
FUND SOURCES:	
Total funds (all sources)	1972–73 1973–74 1974–75 1975–76 % change
General operating funds (actual)	1972–73 1973–74 1974–75 1975–76 % change
Budgeted	1976–77
Other funds	1972–73 1973–74 1974–75 1975–76 % change
Other funds as a % of total funds	1972–73 1973–74 1974–75 1975–76

INSTRUCTIONAL DATA:	
Course contact hours offered (Academic year total on-campus instruction excluding unscheduled teaching)	1972–73 1973–74 1974–75 1975–76
Number of sections (fall quarter, excluding labs or discussion)	
Lower	1972–73 1973–74 1974–75 1975–76 1976–77
Upper	1972–73 1973–74 1974–75 1975–76 1976–77
Graduate	1972–73 1973–74 1974–75 1975–76 1976–77
Degrees conferred	
B.A./B.S.	1972–73 1973–74 1974–75 1975–76 % change
M.A.	1972–73 1973–74 1974–75 1975–76 % change
Ph.D.	1972–73 1973–74 1974–75 1975–76 % change

Note: College and department columns have been omitted for display convenience.

Figure 2. Format for college and department review of faculty, fund source, and instructional data elements.

3. Data collection and subsequent use provided an excellent means to critique the strengths and weaknesses of operational data systems.

4. Persons responsible for the collection and reporting of operational data were informed of how their data were being used to develop management information. Suggestions were made (and some were implemented) regarding the improvement of these data bases.

5. Information included in the guide was up-to-date.

6. Data analyses were issue directed and simple to communicate and understand. Policy analysis was facilitated by the availability of relevant information.

7. Distribution of the guide to deans informed them of the specific data used by executive officers in arriving at resource allocation decisions. This awareness permitted these administrators to begin resource negotiations from the same reference point.

8. The guide contained data items often required by external agencies, including accrediting agencies.

9. Preparation and distribution of review data to deans and department heads lightened their load in preparing this information.

In summary, it should be emphasized that the lessons learned when preparing the Planning and Budgeting Guide have caused academic and financial planning staff to be critical when analyzing the data supplied in standard operating reports. Where these data are input directly to a computer-based information system, there must be awareness of potential problems concerning the validity and reliability of the system's output. The preparation, by hand, of reports for use by college and university administrators offers the distinct benefits that derive from "hands on" experience. In addition, these efforts pave the way for eventual assimilation of the reports into a totally automated process.

The following recommendations are offered to those who would wish to follow the illustration presented here. They should, in addition, provide useful reminders for those persons who rely on computer-based information systems as the source of management information.

1. There should be a constant monitoring of the sources of operational data and a check on the utility of such data for planning and management purposes.

2. Administrators should be encouraged to identify the issues and concerns they wish to have addressed before data is collected and analyzed.

3. Persons or offices where data is generated should be tapped as a source of expertise with insights into the quality and meaning of the data provided.

4. Sufficient time should be allowed for data analysis before reporting.

5. Procedures for information collection and update should be thoroughly documented so that tasks can be performed by clerical staff under supervision. This assures continuity of efforts and comparability of data.

6. Information should be disseminated as widely as organizational policy will permit. This will help to negate the need for colleges and departments to maintain separate records or hire analytical studies staff of their own.

7. Efforts to increase the number of organizational units covered should be made. (For example, efforts are underway to develop and report planning and management information for use by the university libraries, student services, and division of continuing education.)

TRANSLATING GOALS INTO MEASURABLE OBJECTIVES: RESEARCH STUDIES AND PRACTICAL PROCEDURES

Leonard C. Romney
Sidney S. Micek
National Center for Education
Management Systems

In a recent essay on university goals, Conrad (1974) points out that goals (a) are standards against which to judge success, (b) provide a source of legitimacy which justifies the activities of an organization, (c) define organizational needs and priorities, (d) define production units for "outputs" for the organization, (e) define the organization's clientele, and (f) define the nature of the relationship between the organization and society. He also points out that "in most universities, goals are often implicit, residing in an extended body of collective understandings rather than in explicit statements" (p. 505). He goes on to say, "If university goals are to serve the purposes listed above, they must be identified more precisely."

The goals of specific colleges and universities have traditionally been described in broad, vague, high-sounding, and, often, internally inconsistent terms. Such a situation did not cause any major problems as long as people fully accepted the intrinsic value of a college education and as long as the demands made on postsecondary education institutions remained relatively stable. However, during the fifties and sixties, postsecondary educational institutions, in particular those in the collegiate sector, came under increasingly severe pressure to grow in size and complexity and to meet the diverse needs, desires, and expectations of many new groups throughout society. In response to these voluminous, diverse demands being made on them, institutions often found themselves trying to become everything to everybody. In the process, colleges and universities of all types grew increasingly alike; they tended to lose their individual identities as they pursued an ideal typified by the university model. As a result, the purposes, goals, objectives, and priorities of institutions have not been very distinct, nor very apparent even to students, faculty, and administrators.

It is apparent that the problem of goal setting becomes one of identifying and clearly stating the following: (1) what it is the institution is trying to accomplish, (2) whom it is trying to serve, (3) how it intends to accomplish its objectives, and (4) how much it intends to accomplish and how well it intends to do it. Without answers to these questions, an institution cannot really specify its purposes and goals sufficiently to meet its internal needs for direction. It also becomes difficult for it to stake out its claim to some special place in the larger postsecondary education community. And, unless institutions get down to tangible, concrete levels of specificity, it is impossible to really answer these questions. The key to solving the problem of goal setting is concreteness or specificity. There seems to be widespread recognition of the problem but limited capability to deal with it. Institutions have found that dealing in the abstract with the development of goals and objectives has proved to be a very frustrating experience: they can often identify and state their goals in general terms but cannot make the crucial leap to the translation of their goals into objectives in terms specific enough to be effectively acted upon and assessed. Developmental work on the development of institutional and organizational unit goals, conducted by the National Center for Higher Education Management Systems (NCHEMS) at institutions such as South Dakota State University and Kalamazoo Valley Community College has further emphasized the need for concrete guidelines and alternative strategies for deciding about goals and, especially, for translating these general goals into specific objectives.

Translating goals into measurable objectives to be pursued by the institution is the step that gives concrete and specific expression to the institution's purposes. It is also a step that is especially difficult to achieve. In translating goals into measurable objectives, all of the issues and complexities related to outcomes identification and measurement come into play. Inability to state institutional purposes in specific, measurable terms often hinders, if not precludes, assessing the extent to which goals have been achieved. Moreover, lack of specificity also increases the difficulty of effective communication with institutional constituencies, especially external constituencies from whom pressures for institutional accountability arise.

In translating institutional goals into measurable objectives, a major difficulty is identifying the pieces of evidence that demonstrate progress toward the achievement of the established goals. One factor contributing to this difficulty is that the persons responsible for identifying outcome measures most often start from scratch. Furthermore, as in the goal-definition process, there is frequently difficulty in reaching agreement on specific measures because of the variety of interests, perspectives, and expectations.

The purpose of this paper is to describe two studies which researched questions related to selecting specific measures to be used in goal translation and evaluation processes. In addition, these efforts provided prototype methodologies that could be used by institutional personnel to support the objective-setting process. These studies were the following: Institutional Goal Achievement: Measures of Progress (Romney, 1976) and Higher Education Outcome Measures Identification Study (Micek and Arney, 1974).

These studies and their implications for the goal translation process are discussed in the following pages.

Institutional Goal Achievement (IGA): Measures of Progress

The IGA study was guided by the following purposes:

1. Assess the interests of three campus constituencies (faculty, administrators, and trustees) in being involved in institutional goal-setting and assessment processes

2. Examine the acceptability of specific goal areas (or planned outcomes) to these three audiences in six kinds of institutions

3. Assess perceptions as to which goal areas can be measured and how they can be measured, as viewed by trustees, administrators, and faculty

4. Gather information regarding perceptions of the appropriateness of specific kinds of information as measures of progress toward the achievement of broadly stated institutional goals

5. Determine if the appropriateness of the measures of progress toward the achievement of institutional goal areas varies significantly among the three constituent groups

6. Determine if the appropriateness of the measures of progress for different institutional goal areas varies significantly among six types of institutions.

The study population consisted of 1150 faculty, trustees, and administrators from 45 colleges and universities throughout the country. These institutions were classified into six major categories, as follows:

1. Public doctoral-granting institutions (7)
2. Private doctoral-granting institutions (3)
3. Public comprehensive universities and colleges (9)
4. Private comprehensive universities and colleges (4)
5. Liberal arts colleges (12)
6. Two-year colleges and institutions (10).

Faculty and trustee respondents to the study were chosen randomly, whereas administrators were selected on their specific institutional responsibility. The survey instrument to which these individuals were asked to respond consisted of two principal sections. The first contained demographic and identifying information about the respondent. The second dealt with measures of progress for twenty broadly stated institutional goal areas. The goal areas were derived from the Institutional Goals Inventory (IGI) developed by and used with permission of the Educational Testing Service (ETS). The IGI consists of several specific goal statements in each of 20 institutional goal areas, 13 of which are designated as outcome goal areas. The remaining 7 are labeled process goal areas by ETS.

Associated with each IGI goal area on the study questionnaire were sets of 4 to 11 measures of progress or possible items of information to be used to demonstrate progress toward the achievement of the goal area in question. All in all, respondents, in addition to the 20 goal areas, were asked to respond to 125 measures of progress. These measures were developed and contributed by the staffs of NCHEMS, Western Interstate Commission for Higher Education (WICHE), and the Higher Education Center of the School of Education at the University of Colorado. In addition, a panel of experts, identified by the author and staff members at NCHEMS, reviewed and supplemented the list of measures.

To complete the questionnaire, respondents were asked to rate the degree to which each goal area should be a goal of his or her institution. Secondly, the respondent was asked to indicate the degree to which each item of information was considered to be an appropriate measure of progress for the goal area.

Findings of the institutional goal achievement study. The study produced a wealth of information, only a small portion of which has been thoroughly examined. A detailed examination of the results and conclusions obtained thus far are recorded elsewhere (Romney, 1976). Only those results that relate directly to the topic at hand, namely translation of institutional goals into measurable objectives, are reported here.

1. Generally, the appropriateness of measures of progress for demonstrating institutional goal achievement did not vary across the faculty, trustees, and administrators. There were only seven instances in which views of the three types of respondents differed significantly. Trustees and administrators differed only with regard to two measures:

(a) Scholarly works produced by students and/or former students that are considered suitable for publication (trustees rating this lower than did administrators)

(b) Institutional policies and procedures developed to protect the exercise of academic freedom by faculty and students (trustees rating this lower than did administrators).

Trustees and faculty ratings of appropriateness differed only for one measure, "institutional policies and procedures developed to protect the exercise of academic freedom by faculty and students" (faculty rating this significantly higher than did trustees).

Administrators' and faculty ratings of the appropriateness of measures of progress differed significantly only with regard to five measures:

(a) Satisfaction of currently enrolled students or recent graduates with their academic development (administrators rating this as being more appropriate than did faculty)

(b) Student/faculty ratios (faculty rating this measure higher than did administrators)

(c) Amount of release time granted to faculty members for community service (faculty rating this higher than did administrators)

(d) Availability and use of an institutional information system (administrators rating this higher than did faculty members)

(e) Satisfaction of students and former students with the extent and nature of their educational experience and subsequent employment (administrators rating this higher than faculty).

2. The results suggest that if the following 14 types of information were collected, progress could be demonstrated toward the achievement of the 7 most important goal areas for each of the 6 institutional types. Moreover, this evidence would be acceptable generally to at least the faculty, administrators, and trustees in each type of institution.

(a) Student ability to apply knowledge

(b) Continuing active intellectual involvement of former students other than formal, advanced study

(c) Course offerings and institutional opportunities pertaining to the development of individual goals, values, and personal growth

(d) Students and/or former students expressing concern for human welfare and well-being

(e) Employer satisfaction with former student vocational or professional training

(f) Scholarly works produced by graduate students and/or former graduate students considered suitable for publication

(g) Basic research publications or other results of scholarly effort produced by students or faculty members during the past year

(h) Evaluations and perceptions of members of the community regarding the quality of institutional services available to them

(i) Existence of special courses and programs to meet the needs of particular groups of students

(j) Institutional policies and procedures developed to protect the exercise of academic freedom by faculty and students

(k) Attendance and participation by faculty in the faculty senate or similar body

(l) Faculty and staff perceptions and evaluations of internal morale

(m) Student and/or faculty attendance at cultural activities sponsored by the institution

(n) Impacts of modifications made in courses and programs.

3. An examination of these 14 items of information reveals a decided lack of compatibility with measures currently used to provide evidence of productivity. For example, in a study conducted to determine which outcome measures of community colleges are collected by state agencies, Kinnison (1976) found that most are required to supply information on the number of students enrolled, full-time equivalent students, and degrees

granted. To such a list one could add grade-point averages and student/faculty ratios as typically collected measures. Yet none of these measures was rated as highly appropriate in this study. In fact, the measures now in use tend to conform more in orientation and substance to those rejected by the participants. This apparent conflict can have some important implications for institutional management and productivity as well as for statewide control and coordination. If the theme of enumeration survives as the way to provide evidence of accountability, institutional administrators and faculty may begin to operate in accordance with radically different incentive structures. Emphasis on quality and impact would pale in the light of degree production and body counts. Indeed, it is suspected that most incentives would operate to maximize degree production and body counts. In such a situation, all participants tend to lose in terms of impact and satisfaction. The measures found to be appropriate pieces of evidence provide an empirically substantiated base for such a change.

4. In a different vein, the results of the study suggest some conclusions regarding the development of goals and measures of progress for these goals. Respondents from six types of institutions from all parts of the country were participants in this study. In general, it can be said that consensus was reached across all types of institutions as to the appropriateness of some goal areas and measures of progress within these goal areas. In some cases, consensus regarding goals and their measures was restricted to agreement within particular institutional types. Therefore, it is suggested that the process of selecting institutional goals and appropriate measures of progress can utilize consensus-building techniques and that these techniques are useful within individual institutions, within systems of similar types of institutions, and across a conglomeration of several types of institutions. The number of goals and measures thought to be appropriate most likely will decrease as the diversity of institutions involved increases. Yet the task of identifying perceptions of common purposes and measures of progress toward their achievement seems to be feasible as well as necessary.

Higher Education Outcome Measures Identification Study (OMIS)

The OMIS was initiated primarily to study and develop procedures for collecting outcomes and associated measures deemed most important to different types and levels of decision makers. The objectives of the study were the following:

1. To learn what outcome information different decision makers need for their decision-making responsibilities
2. To learn what outcome information currently is available to them
3. To identify a high priority list of outcome measures for which data acquisition procedures need to be developed.

OMIS survey questionnaires were sent to 388 randomly selected college administrators (including 97 presidents, 97 chief academic officers, 97 chief student affairs officers and 97 chief fiscal officers) and 125 state-level decision makers (including 75 statewide planners and 50 state legislators). The overall response rate for the study was 58%. Responses were received from at least one administrator in 95 of the 97 institutions included in the pool. Whereas 235 (61%) of the college administrators returned completed OMIS questionnaires, only 64 (51%) of the state-level participants responded.

The participants in the study were asked three types of questions. The first question concerned the extent to which they felt they needed information about each of the ten outcome information categories delineated in Section 1 of the questionnaire (see Micek and Arney, 1974). The second major question dealt with the extent to which each respondent felt the need for each of the specific outcome measures listed in Section 2 of the questionnaire. The final question pertained to his or her access to, or ability to obtain, each of the outcome measures presented in Section 2.

Findings of OMIS study. Detailed results of the OMIS project are reported elsewhere (Micek and Arney, 1974). However, the following are a few excerpts from those findings that are directly related to the goal translation process.

1. Three measures in the OMIS effort were given a high Need to Know endorsement by all six groups. They were:

(a) Number of students graduating from the institution after a certain period of time as a percentage of their entering class

(b) Number and percentage of graduates for the year who transferred from another school

(c) Number and percentage of students leaving the institution prior to receiving a degree, diploma, or certificate during a particular academic term or year.

In addition, five measures were given a high Need To Know endorsement by at least five of the six groups:

(a) Number and percentage of students surveyed who were taking noncredit, independent study, or special courses

(b) Number of students receiving a degree, diploma, or certificate within a certain time period

(c) Average amount of time it takes a student to earn a degree, diploma, or certificate

(d) Student scores on a scale measuring the degree of satisfaction with their progress in achieving their occupational career goals

(e) Number and percentage of former students (graduates and nongraduates) surveyed who were employed within a certain time after leaving the institution.

2. Interesting similarities and differences occurred among the six respondent groups. With the exception of the group of chief fiscal administrators, the top-ranked measure for each of the groups was in the outcome area entitled Student Educational Career Development. The following identifies some highlights with respect to each of the groups:

(a) *Presidents*—This group endorsed the widest range of outcome measures. Possibly this is a result of the wide range of decision-making responsibilities encountered by people in this group. Two measures were unique to this group.

(b) *Academic affairs administrators*—This group appears to have the greatest need for measures relating to Student Knowledge and Skills Development, Student Educational Career Development, and the Development of New Knowledge and Art. To some extent, this was to be expected, given the planning and management responsibilities of respondents in this group.

(c) *Student affairs administrators*—Respondents in this group appear to have concentrated on measures concerning Student Educational Career Development, Student Educational Satisfaction, and Student Occupational Career Development, respectively. Of all the groups, this group indicated the greatest need for Educational Satisfaction measures. It is interesting to note that, of the five measures unique to this group, four involve student perceptions about their educational progress. This may suggest that student affairs administrators are more receptive to this kind of information.

(d) *Budget and finance administrators*—As expected, respondents in this group favored those measures directly linked to financial data. Further, each of the five measures that were endorsed only by this group concerned the acquisition of financial data.

(e) *State-level planners*—This group of respondents endorsed many of the same measures concerning Student Educational Career Development endorsed by the respondents in the four institutional decision-maker groups. Of all the groups, state-level planners favored the greatest number of measures associated with Student Occupational Career Development.

(f) *State legislators*—This group concentrated its major attention on measures associated with Student Knowledge and Skills Development, Student Educational Career Development, and Student Occupational Career Development.

Implications for Goal Translation

As stated at the outset, goal translation is the process of stating institutional goals in specific, measurable terms; that is, stating them in terms of measurable objectives. This goal translation process can be disaggregated into the following, greatly simplified steps:

1. Identification of the full range of goals for the organization
2. Selection of those goals that will be most important
3. Identification of the kinds of information that could be used to assess the degree to which the high priority goals are being accomplished
4. Selection of the information items (e.g., outcome and environment measures) that will be used to assess levels of goal attainment
5. Preparation of objectives stated in terms of the information items selected previously as well as the audience for whom they are intended and the minimum performance levels expected.

The reader should recognize that the goal translation process, a very complex exercise indeed, is only partially supported by the study procedures and findings recounted within this paper. For example:

1. Both the IGA and OMIS procedures can be useful to assist decision makers in the goal selection (Step 2) and measure selection (Step 4) procedures outlined previously.
2. The questionnaires and results of both studies may serve as resources during the goal and measure identification processes (Steps 1 and 3 respectively). Clearly, however, there are numerous sources of goals and measures that might be referenced. Relying on these two studies would limit the scope of the goal translation exercise.
3. Individuals involved in the goal translation process should consider measures of the types preferred by decision makers and postsecondary education participants in the IGA and OMIS studies, that is, measures of measurable impact and satisfaction.

In conclusion, the authors suspect that not only are the procedures of these two studies useful for addressing portions of the goal translation problem but also that when they are used in individual organizational units, institutions, systems or other populations as research tools, important insights can be gained about the outcomes information preferences and needs of postsecondary education participants and constituents.

References

Conrad, C. University goals: An operative approach, *Journal of Higher Education*, 1945, *45*, (7), 505–515.

Kinnison, C.F. *Outcome measures which state agencies require of public community colleges*. Unpublished doctoral dissertation, University of Toledo, 1976.

Micek, S.S. and Arney, W.R. *The higher education outcome measures identification study: A descriptive summary*. Boulder, Colorado: Western Interstate Commission for Higher Education, 1974.

Romney, L.C. *Institutional goal achievement: Measures of progress*. Unpublished doctoral dissertation, University of Colorado, 1976.

EXPLORATORY ANALYSES OF A LARGE DATA BASE: A STUDY OF AMERICAN MEDICAL SCHOOLS

Charles R. Sherman
Michael G. McShane
Association of American Medical Colleges

As multivariate statistical methods become increasingly available and widely used, it is only natural that new ways of using these techniques will be sought. One possible application of these methods is the exploration of the large masses of data which are gathered for both inter- and intra- institutional purposes. Using the methods described in this paper, it is possible to examine similarities and patterns in the data collected and in the objects that these data describe, whether they be faculty members, departments, or institutions. The purpose of this paper is to describe a series of multivariate studies aimed at exploring the underlying dimensions in an institutional data base maintained by the Association of American Medical Colleges (AAMC) and the patterns of similarity among the institutions.* The understanding gained from the identification of basic dimensions of difference and the grouping and mapping of similar schools can guide decisions that affect these institutions.

The purpose of the analyses described in this paper was not to answer specific questions but rather to systematically probe existing data to illuminate areas of potential interest for further investigation and to generate research questions and testable hypotheses. It cannot be stressed too often that the analyses described in this paper are exploratory. They were designed and conducted to "map the territory" existing in a heterogeneous compilation of quantitative measures of the institutions of medical education in the United States. Further, the analyses described here are secondary analyses, using data initially gathered for other purposes (primarily institutional accreditation), to enhance existing knowledge about the process of medical education from an institutional perspective.

The studies described in this paper used three different multivariate statistical procedures: factor analysis, cluster analysis, and multidimensional scaling. Briefly, factor analysis is essentially a means of grouping variables which correlate with one another. By illuminating groups of variables that are related to one another and that may be thought of as being related to a common underlying dimension, factor analysis simplifies somewhat the examination and interpretation of the full set of correlations between all pairs of variables. Cluster analysis and multidimensional scaling, the other analytic procedures used, are methods of creating simplified models of institutional similarity based on several empirical or derived measures. Cluster analysis sorts institutions into groups such that the schools in a particular group have similar values on all of the variables, while different groups have dissimilar value profiles. The third technique, multidimensional scaling, produces a map of institutions in fewer dimensions than were present in the original data in such a way that distances on the map correspond closely to the numerical similarity among the institutions.

Procedure

AAMC's Institutional Profile System (IPS) is the computerized repository for most of the institutional data collected by the association. In August 1976, there were more than 8,000 data elements from over 60 different sources in IPS. Many of the data were longitudinal repetitions of the same variable for as many as 15 years (1959–60 through 1974–75). The data in IPS come from a number of different kinds of sources including annual surveys, special purpose surveys and questionnaires, and other AAMC and non-AAMC data bases from which data may be aggregated by institution. The other, noninstitutional data bases describe applicants and students, faculty, and research grant applications. Data elements from the most current sources in IPS were initially screened for the present series of students using a number of criteria including completeness, lack of redundancy with other measures, and a potential for revealing previously undescribed dimensions of variability among institutions. In addition, a number of relative measures, such as ratios and percentages, were computed from the existing variables. The initial screening resulted in the selection of 139 variables from four general domains: institutional characteristics (45 variables), student (40), faculty (22), and curriculum (32). A series of preliminary factor analyses was performed within each of these four domains to reduce the final set of variables to those that were most complete and which described the institutions on a number of meaningful dimensions.

The final set of 33 variables on which the analyses described in this paper were based consisted of 14 student variables, 13 institutional measures, 4 faculty variables, and 2 curriculum variables. The proportional representation of the variables in the final data set was due, in part, to the predominance of student data in IPS and the qualitative nature of the curriculum data in the data base. The final data set also consisted predominantly of *relative* measures, (e.g., the percentage of medical students who are female) rather than the original raw counts contained in IPS (e.g., the number of medical students enrolled). Preference was given to relative measures in order to allow institutional characteristics other than overall size to be exposed in the analyses.

The first step of the analysis was the factor analysis of the 33 variables selected from the most recent data in IPS. The factor analytic method employed was principal components analysis. The first nine components extracted from the correlation matrix, which accounted for 74.4 percent of the variance in the data, were retained for rotation. A number of varimax rotations were performed in which different numbers of the components, ranging from 9 down to 4, were rotated. These six solutions were then compared, and the eight-component solution was selected as the most interpretable and intuitively appealing.

---

*The work on which this paper was based was performed pursuant to Contract No. 213-76-0011 with the Health Resource Administration, Department of Health Education and Welfare. References to individual reports describing the studies in detail are included in the references of this paper.

The cluster analysis performed in this study was done in two steps. In the first step of the clustering process, 110 U.S. medical schools were hierarchically clustered on the basis of their values on 8, 6, and 5 factor scores using a technique developed by Ward (1963). These three analyses were conducted to assess the impact of selected factor scores on the hierarchical solution. However, hierarchical cluster analysis forces all objects under consideration to be combined, thereby allowing for distortion of natural clusters by inclusion of outlying objects.

The second step of the cluster analysis procedure involved using the results of the hierarchical cluster analysis to initiate a refinement of the derived clusters through an iterative cluster analysis technique developed for Forgy (1965) which minimizes the differences of objects within clusters without the artificial permanence of cluster membership inherent in the hierarchical approach. In the second step of the clustering, this method was applied several times to derive cluster solutions ranging from 12 clusters down to 6 using factor scores as input. From the variety of possible clusterings, the 8-cluster solution was selected for presentation based on its representation of the schools and their similarities.

The final phase of the analyses in this series involved the application of multidimensional scaling, separately to public and private schools, to derive spatial maps of the similarities among the schools. Similarity matrices for the two groups of schools were submitted to both metric and nonmetric procedures. Metric multidimensional scaling is a computational algorithm that accepts an N-by-N symmetric matrix of similarity (or dissimilarity) measurements between all pairs of N objects, and produces a set of spatial coordinates for each of the N objects. The mathematical underpinnings of metric multidimensional scaling are detailed in Torgerson (1958). Basically, the input matrix of distances is transformed and then factored by the principal axes method. In metric multidimensional scaling, the distances must be established on a ratio scale of measurement. The more recently developed method, nonmetric multidimensional scaling, requires only that ordinal assumptions be made of the dissimilarity measures (Shepard, 1962). Similarities matrices for both groups of schools were computed from the 12 variables which defined the two factors, derived by factor analysis, describing graduate medical education emphasis and research emphasis. The two similarities matrices were scaled into 3 dimensions and into 2 dimensions using both methods. Thus, 8 models of medical school similarities were developed and compared.

Results

The factor analysis of 33 selected institutional variables produced six major (and two minor) independent dimensions of variation among medical schools, which formed the basis of the subsequent analyses. The six major factors, and the variables from which they were formed, are presented here in Figure 1. The first factor combines a number of variables which assess, in different ways, the degree of graduate medical education emphasis in medical schools. Factors 2 and 3 measure the size and age and the degree of public and private control of the institutions. (In the latter factor, schools with high scores are similar to most private schools, while schools with low scores are similar to public medical schools.) The variables which make up Factor 4, with the exception of the percentage of female medical students, measure the research funding success of the schools on applications for new single-investigator research grants from the National Institutes of Health (NIH). Factor 5 assesses the degree of current growth among institutions, and Factor 6 measures the extent and emphasis of sponsored research activity among the schools.

Factor scores were computed for 110 medical schools on the six factors described above. The factor scores were then used as input to cluster analysis, the results of which are presented in Figure 2. A final cluster solution was derived which enumerated eight clusters of medical schools. The schools which formed each cluster are listed in the left-hand column of Figure 2, and the mean scores for the schools in each cluster on the six factors are graphed as cluster profiles. Cluster 1 is composed of 17 established medical schools which happen to be located primarily in the South and Midwest. These schools were below the average of all 110 schools on each factor except size and age. In comparison, Cluster 2 consists primarily of public schools which are the oldest and largest of any of the groups but which are still growing and developing. Cluster 3 is also composed of public institutions, but, in contrast to the schools in the first two clusters, the schools in Cluster 3 place heavy emphasis on research and are relatively successful in obtaining research funding from NIH.

I. Graduate Medical Education Emphasis
    Average salary of associate professors of basic sciences
    Ratio of housestaff to medical students
    Ratio of medical students to full-time medical school faculty (−)
    Percentage of living medical school alumni in general practice (−)
    Percentage of medical school faculty who are M.D.'s

II. Size and Age
    Number of medical students
    Age of medical school
    Percentage of medical school alumni who are board certified

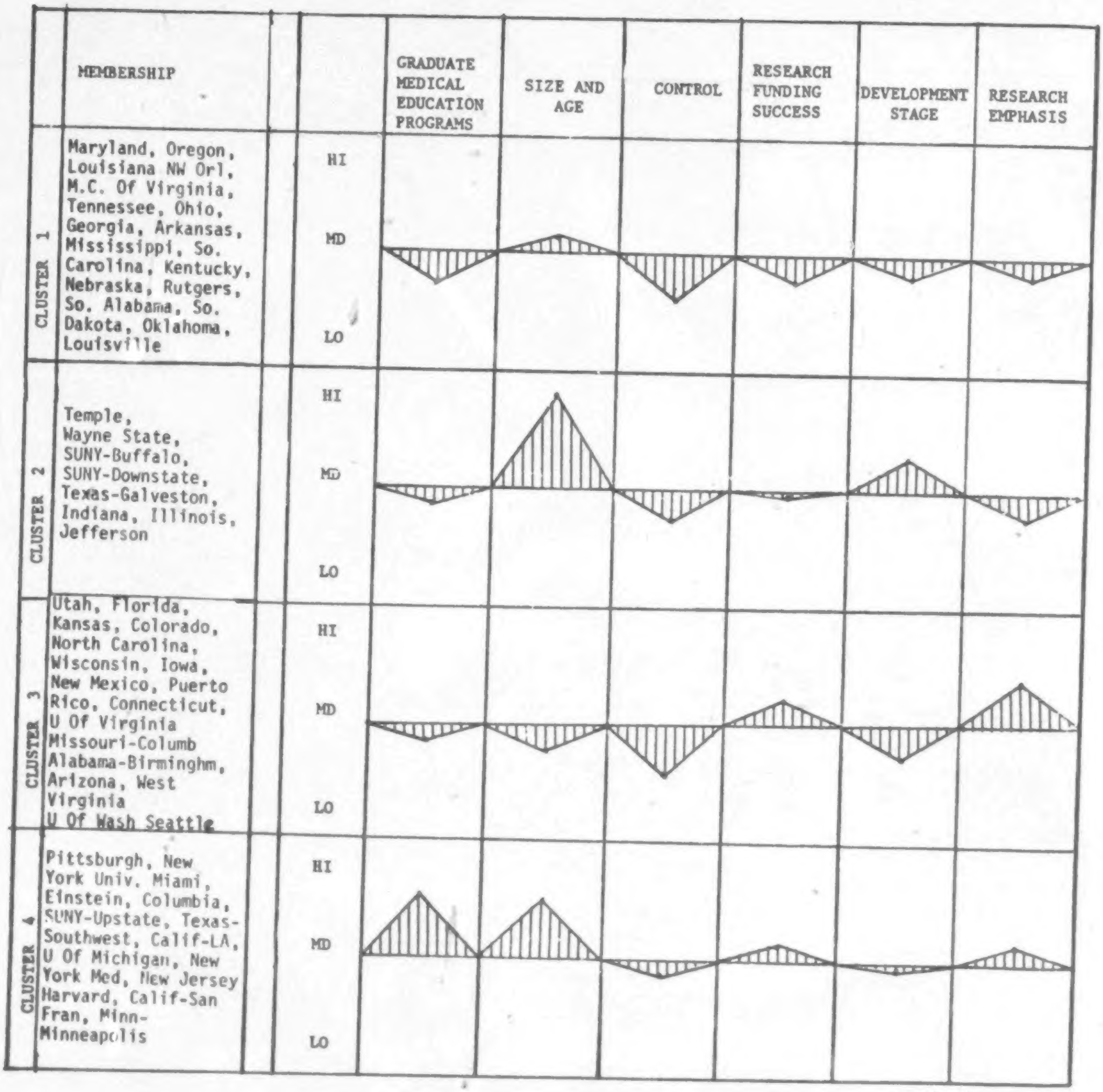
III. Control
    Control (0 = Public, 1 = Private)
    Medical school tuition for in-state students, 1975–76
    Percentage of in-state first-year medical students (−)
    Ratio of applicants to first-year medical students
    Percentage of revenue from federal sources
    Percentage of revenue from gifts

IV. Research Funding Success
    Percentage of requested single investigator research funds awarded
    Mean standardized priority score—single investigator research applications
    Single investigator research application approval rate
    Percentage of female medical students

V. Development Stage
    Ratio of volunteer faculty to full-time faculty
    Percent of change in sponsored research from NIH, 1967–74
    Projected annual percent change in enrollment, 1974–79

VI. Research Emphasis
    Number of single investigator research grants approved
    Percentage of total expenditures for administration and general expense (−)
    Percentage of total expenditures for sponsored research
    Ratio of basic science graduate students to medical students
    Adjusted total revenue
    Percentage of first-year medical students with undergraduate GPA's between 3.6 and 4.0

Figure 1. Six factors and component variables derived from factor analyses of medical school characteristics.



(continued on next page)

Figure 2. Cluster membership and profiles of cluster centroids on six factor scores.

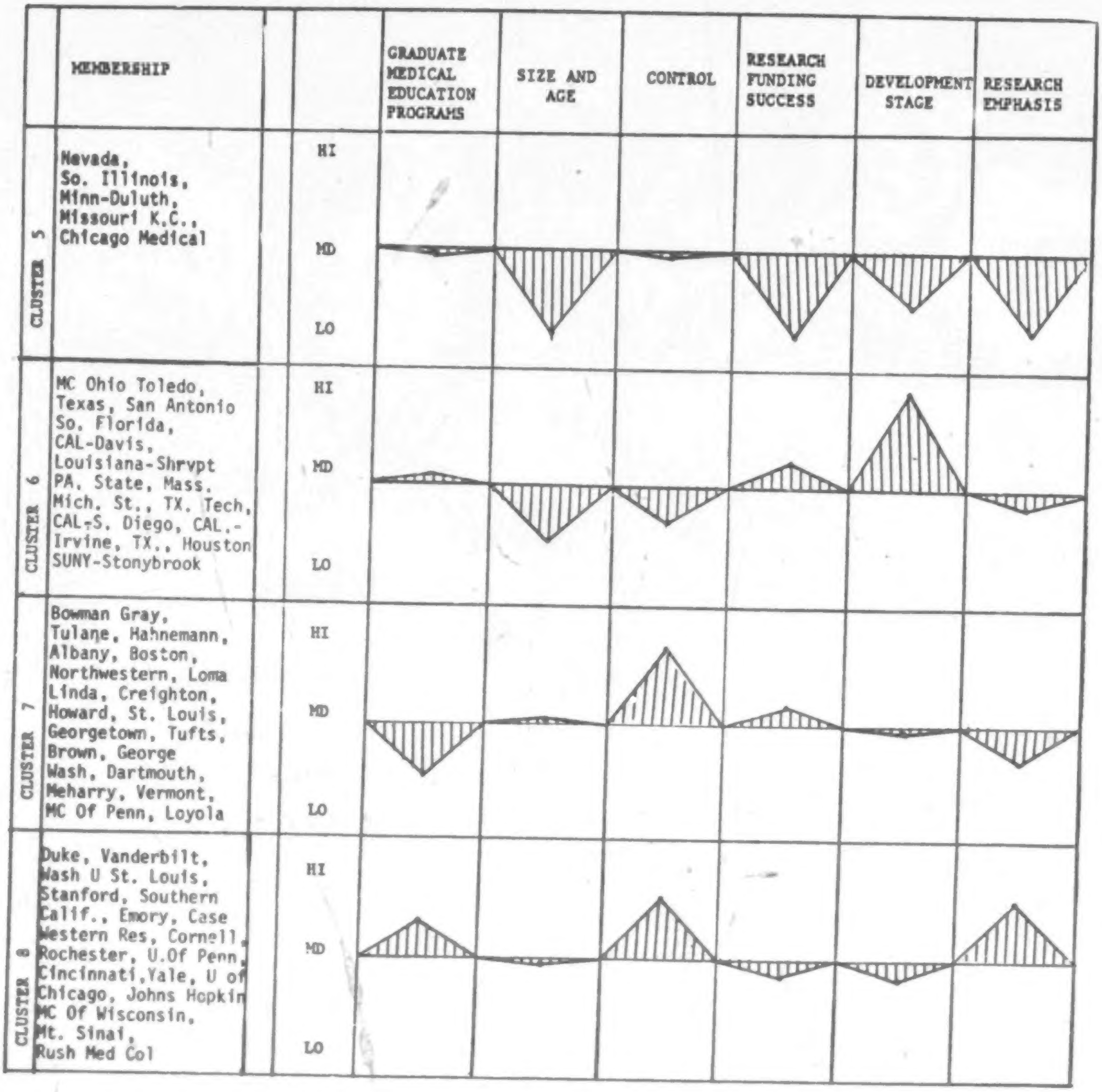
Cluster 4 is evenly divided between public and private medical schools. As a group, these schools have large undergraduate medical education programs and the strongest emphasis on graduate medical education of any of the groups. These schools also place higher than average emphasis on research.

Clusters 5 and 6 are both composed primarily of relatively new, public medical schools. Cluster 5 contains the newest, smallest, and least research-oriented schools of any of the clusters (including two schools, Nevada and Minnesota-Duluth, which offer only two-year basic science curricula). The schools in Cluster 6 are also relatively new, but they are the most rapidly developing of any of the groups of schools.

Clusters 7 and 8 are both composed primarily of private medical schools, but the two groups have opposing characteristics. The schools in Cluster 7 are slightly above average in size and age but have relatively low emphasis on graduate medical education or research, whereas the schools in Cluster 8 are slightly below average in size and age but place heavy emphasis on graduate medical education research.

Twelve variables which defined two of the factors derived in the factor analysis, research emphasis and graduate medical education emphasis were used to compute separate similarities matrices for public and private medical schools. These similarities matrices were then used as the basis for multidimensional scaling.

(Figure 2, continued from previous page)



Metric multidimensional scaling produced the "maps" of private schools and public schools presented in Figures 3 and 4. Plotted points represent the schools. Long distances between two points indicate that two schools are different with respect to the emphases they place on research and graduate medical education programs. Schools plotted close together are similar in these respects. The vectors plotted onto the map were derived using regression methods and serve to indicate the meaning of several directions on the maps. The multiple correlation coefficients, *R*, indicate how well the map summarizes each of several single measures. The orientations (after rotation) of the best-described vectors on the public and private maps are highly similar, giving some assurance that the same dimensions of difference are generally applicable.

The nonmetric multidimensional scaling results and their corresponding regression results were not noticeably different from those reported. In all cases, two dimensions seemed sufficient to represent the similaritites of schools with respect to the twelve input measures.

Discussion

The objectives of the study were successfully met through the use of factor analysis, cluster analysis, and multidimensional scaling: a large institutional data base was explored for peculi-

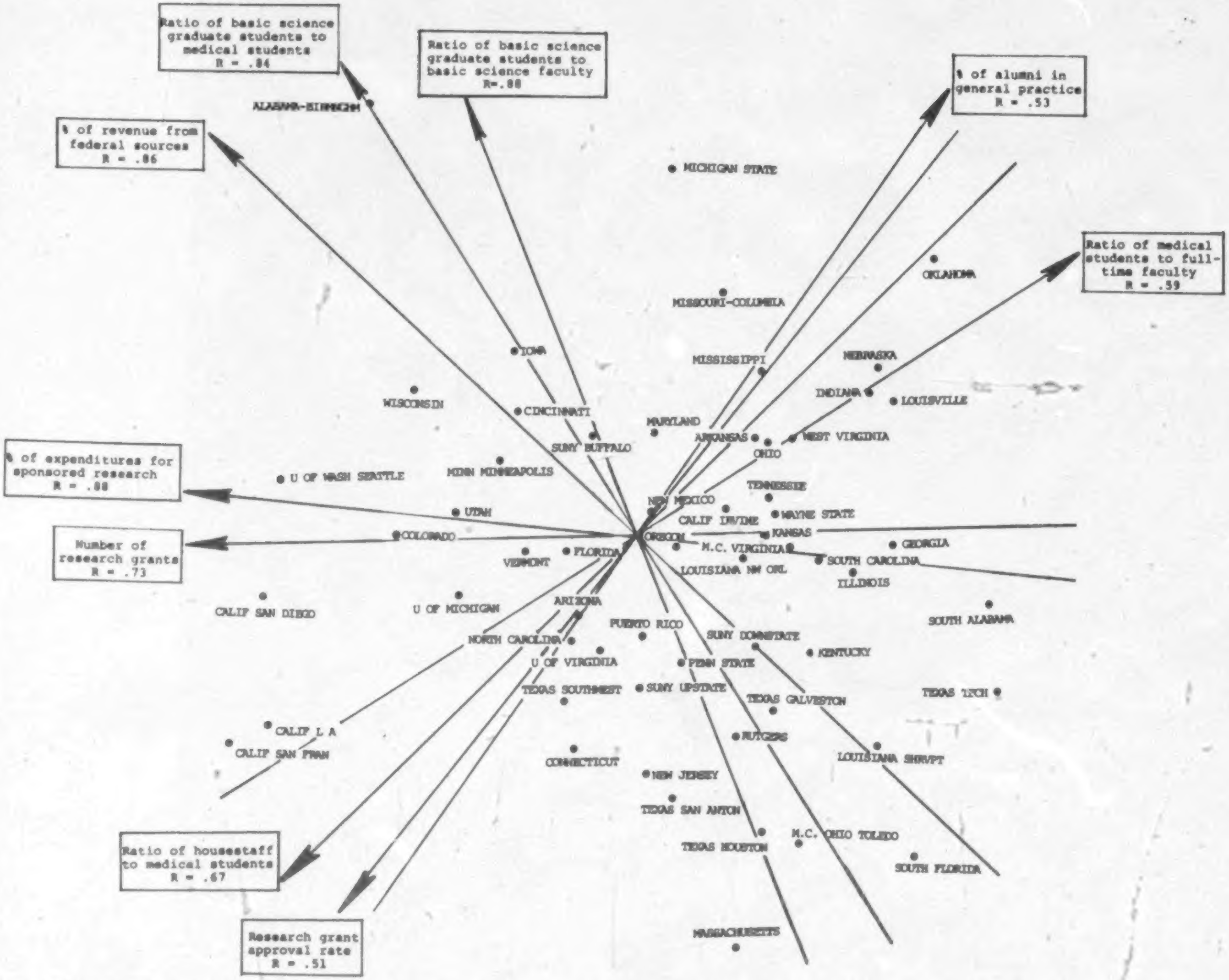


Figure 3. Two-dimensional model of similarities between 44 private medical schools with respect to measures of research emphasis and graduate medical education emphasis, with vectors representing best fit of several individual measures.

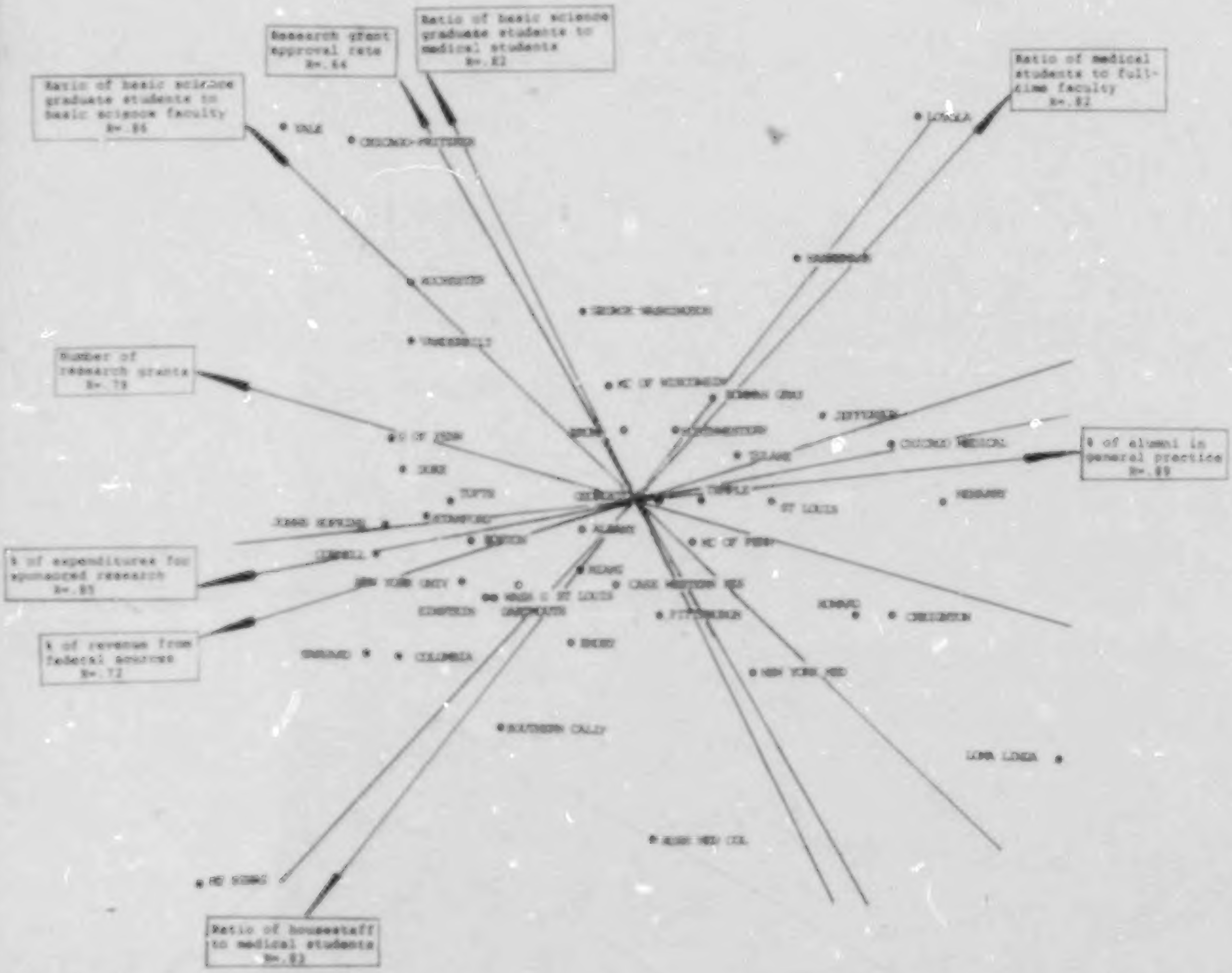


Figure 4. Two-dimensional model of similarities between 50 public medical schools with respect to measures of research emphasis and graduate medical education emphasis with vectors representing best fit of several individual measures.

arities and simplifying patterns; a number of interpretable basic dimensions of institutional variation were identified; institutions were grouped into describable like categories; institutions were mapped onto dimensions for which no single measures were known to be adequate axes, displaying a visual summary of some of the similarities and differences of all U.S. medical schools.

In the process, something was learned about individual institutions (To what schools is my school similar? How is it similar to and different from another school?), about the institutions in general (What are their basic dimensions of difference?), about the data base itself (Are the data accurate, complete, and comprehensive?), and about the methods in an interinstitutional exploratory research application. Some of the findings about the data and the methods are of general interest and are summarized in the following paragraphs.

1. In the process of conducting the exploratory data analyses, some deficiencies in the data were noted. The values of some variables for some schools were in error. Some measures, such as the numbers of clinical faculty and the number of non-MD-seeking students reported in units of medical student equivalents, were found to harbor problems of definition. This precluded their use in constructing reliable new indicators and factor scores. In addition, it was noted that there was an absence of quantitative measures of curriculum and outcomes of the process of undergraduate medical education which reduced the comprehensiveness of these studies. Partly as a result of the exploration of the data base, efforts have been begun to overcome this deficiency.

2. The methods were found to be sensitive to extreme values in the data base and to extensively missing data for individual institutions. Often the effects were readily noticeable as extreme factor scores, lopsided multidimensional scaling solutions, or schools that resisted being clustered. When such effects were noticed, they could be corrected by dropping suspect data or schools from the analysis. It seems unlikely, however, that minor aberrations in the data affected the results.

3. Two schools with valid extreme values, it was observed, can cause correlations high enough to define a factor. The occurrence of a minority factor was due to two medical schools that traditionally admit a majority of students from ethnic minorities. Their faculties, too, have relatively high proportions of minority members. The minority factor, while valid, is not of general value since it distinguishes only two institutions from all others.

4. In some research applications, similarity measures are the result of subjective judgments or other forms of direct measurement. In the present study, similarities were computed from data using the Euclidian distance function. In this case, it was found, the results of metric multidimensional scaling and the more expensive nonmetric multidimensional scaling were equivalent.

5. It was found that imposing the cluster analysis model of medical school similarities with respect to six factors onto the multidimensional scaling model for two factors enhanced the interpretability of both models. This was done by plotting schools on the map with symbols corresponding to cluster memberships. The general differences between groups could be observed as well as the gradations of difference of schools within groups.

There seem to be a variety of possible uses for the results of these exploratory studies. Planners at one school may wish to readily identify another school that shares certain characteristics for consultation about a related problem. The groupings and maps can be used to select representative schools for sample surveys. The maps provide an instant overview of the universe of U.S. medical schools for someone needing to learn about all schools. It has even been suggested that the results can be used to divide an assembly of medical school deans into discussion or dinner groups that are likely to share common interests and problems. The factor analyses raised several questions that may serve as the basis for further studies.

In conclusion, the three multivariate tools were found to be useful in a process of exploratory data analysis that led to results having some potential for decision making.

Forgy, E.W. *Cluster analysis of multivariate data: Efficiency versus interpretability of classifications.* Paper presented at the Biometric Society Meeting, Riverside, California, 1965.

McShane, M.G. *An empirical classification of U.S. medical schools by institutional dimensions.* Washington, D.C.: Association of American Medical Colleges, 1977.

Shepard, R.N. The analysis of proximities: Multidimensional scaling with an unknown distance function: I & II. *Psychometrika*, 1962, *27*, 125–140, 287–315.

Sherman, C.R. *A second exploratory analysis of the relations among institutional variables.* Washington, D.C.: Association of American Medical Colleges, 1977.(a)

Sherman, C.R. *A multidimensional model of medical school similarities.* Washington, D.C.: Association of American Medical Colleges, 1977.(b)

Torgerson, W.S. *Theory and methods of scaling.* New York: Wiley, 1958.

Ward, J.H. Hierarchical grouping to optimize an objective function. *Journal of the American Statistical Association*, 1963, *58*, 236–244.

THE ECOLOGY OF ACADEMIC PROGRAMMING: A METHODOLOGY FOR ANALYSIS OF ACADEMIC PROGRAM OFFERINGS ON A STATEWIDE BASIS

S.V. Martorana
Pennsylvania State University
Eileen Kuhns
Catholic University of America

The Problem

Programs of instruction leading to degrees traditionally have been regarded as the heart of the academic enterprise. Collegiate institutions and their faculties zealously claim the right to determine the scope and nature of their programs. Traditionally, this prerogative has been honored by those responsible for setting public policy. Governors, legislatures, state officials, and state boards, as a general rule, have resisted pressures to change this classic relationship between academic institutions and the programs they develop to serve their clienteles.

In an environment marked by declining enrollments and fiscal stringency, however, the academic community is increasingly aware of legitimate reasons for external interest in their programming policies and decisions. This awareness raises two basic questions: What can be done to develop a better understanding of academic programming and how can the traditional principle of leaving academic programming decisions to the academic community be preserved?

The study on which this report is based began with these questions. Although the methodology was developed in one state, it is adaptable to institutions in any state or region faced with similar circumstances. The ubiquitous issue of program duplication—whether wasteful or necessary—was central to this inquiry. Four major emphases evolved from this issue and concentrated on the need for availability, supply characteristics, and possible oversupply of academic programs.

Funded by two national and one regional foundation, this project was sponsored by the state's voluntary association of colleges and universities in cooperation with the state's degree-granting proprietary schools. It was commissioned by the state board of education. This broad base of involvement is reflected in the scope of the project, which included the study of some 5000 academic programs, at all degree levels, in all of the state's public and private collegiate institutions and degree-granting proprietary schools. The high level of interinstitutional cooperation represented in the initial sponsorship and subsequent participation was essential to the success of the project, but, nevertheless, could be regarded as something of a political miracle in itself.

Methodology

The state of the art in the study of academic programming may be divided into three broad phases: (a) preparing a statewide (or system-wide) inventory of degree program offerings, using the Higher Education General Information Survey (HEGIS) or similar classification; (b) conducting a systematic program review of categories of programs, such as those at the doctoral level or in the health professions; and (c) analyzing the statewide "ecology of degree opportunities," including program characteristics, institutional settings, and demographic and societal factors such as population density and student and manpower demand.

A number of states, but by no means all, regularly prepare an updated inventory of their degree programs (Phase 1). Other states are in the process of conducting program reviews to assist with decisions about existing or projected programs (Phase 2). This paper presents a beginning model for Phase 3, based on a 15-month analysis of academic programming in a large eastern state.

The research design rests on a series of assumptions and value premises, including those related to access, diversity, and institutional initiative for the wise use of scarce resources. The basic technical assumptions are that (a) a specific degree program at a specific institution is the unit of inquiry and that (b) the description of this degree program unit must include its relation to all programs with the same HEGIS classification and degree level located at institutions within a defined geographic radius.

Thus, each computerized unit record described one academic degree program in its institutional setting. However, the unit record also included information about any pairs of programs of which the initial program constituted one member. Programs were considered to be geographically paired if they existed within 30 miles of each other at the associate level, within 50 miles at the baccalaureate and master's levels, and anywhere in the state at the first professional and doctoral levels.

Part of each unit record was the value for an index of geographic coexistence. This index was developed to reflect the level of geographic program duplication for each of the programs included in the study. To calculate this value, each member of a pair of programs was assigned half (0.5) of the pair credit designated for each pair. Thus, if a baccalaureate degree program in economics at Institution A were within 50 miles of four other such programs (at Institutions B, C, D and E), the unit record for the program at Institution A would show a pair credit of 2.0, or 0.5 of the pair credit for each of the pairs: A—B, A—C, A—D, and A—E. In contrast, the economics degree program at Institution B might be a member of only one pair (A—B), in which case its unit record would show a pair credit of only 0.5. The individual program has its own index of geographic coexistence, which is the sum of its pair credit.

The index of geographic coexistence is the number of pair credits per program, for any program or group of programs under consideration. The pair credits may be aggregated (from the program unit records) to show the level of geographic coexistence for various categories (such as degree level, HEGIS classification, type of institution, or educational planning region) into which programs may be grouped. For programs grouped according to any single category, or combination of categories, an index of geographic coexistence (pair credits per program) may be obtained from the unit records of the constituent programs. Such aggregated information throws instant light on such questions as whether there is more geographic duplication at the associate or baccalaureate level in the proprietary schools than in community colleges, or whether the social sciences have more duplication than the physical sciences.

The unit records for all programs in the study contained a limited amount of information, while the unit records for the paired programs contained a considerably expanded set of data items.

Unit records, for all degree programs in the study, included a number of data items obtained by the project staff from state and federal documents (e.g., the annual HEGIS reports) or from other sources (e.g., a special manpower study) rather than directly from the institutions themselves. Examples of such items were number and sex of program graduates, tuition and fees, opening fall enrollment for the institution, relative adequacy of manpower demand for the program's graduates, the program's HEGIS classification, latitude and longitude readings (for determining pairing), segment or type of institution in which the program was offered, county and county population, educational planning region, and so on. Two other indices, also included for all degree programs, were the index of graduate production (average graduates per program) and the index of availability (programs per adult population) and a manpower demand indicator (the relationship between projected program graduates and projected job possibilities).

For programs which were paired, other data items and information for three more indices were requested directly from the institutions by means of a 44-item questionnaire sent to the chief executive officers by the project staff. The questionnaire included items about program objectives and characteristics, institutional setting, admission requirements, faculty load and compensation, information about program majors, credit distribution, instructional characteristics, degrees conferred, and so on.

Academic programs which were paired on the basis of geographic proximity might, in fact, be quite different when examined in terms of these and other descriptors. An index of program similarity was developed based on a comparison of the two programs in each pair relationship over the entire range of collected data items (program descriptors).

For every pair of programs, a difference score was calculated for each data item. The difference score was defined as the difference between the values shown by the two programs for the particular data item. A distribution was then made of these difference scores—for this one data item, for all programs statewide with the same degree and HEGIS classification. Whether the members of any one pair of programs were to be regarded as "matched" (similar) on that variable depended on the relative position of their difference score in the statewide distribution of difference scores noted above. More specifically, the pair of programs was regarded as matched—for a given data item—if its difference score fell at or below the median in the statewide distribution of difference scores for this particular HEGIS classification and degree level. Just as the two members of a program pair shared the one pair credit (each receiving 0.5 pair credit for its unit record), so the two members of a pair matching on a given data item shared the *match credit* (each receiving half of the match credit for its respective unit record). Match credit, then, was assigned to a program whenever the difference score exhibited by the program pair for a data item fell at or below the median on the statewide distribution of difference scores for this HEGIS classification and degree. (Match credit differed slightly for pairs falling at, as compared with below, the median difference score.) From this accumulation of match credit, an index of similarity was developed for each paired program. Although oversimplified for this brief presentation, the index of similarity for a program may be expressed as a ratio of program match credit to program pair credit.

Although the project steering committee (representative of the several segments or types of institutions) discussed a number of times the question of relative importance among the various program descriptors, no conclusions were reached on this issue. In fact, such a judgement was regarded by some as being within institutional prerogative. For this and other reasons of time and resources, the data items used for the index of similarity were weighted equally. In any future applications of this model, whether in the original state or elsewhere, differential weighting of data items will likely by reconsidered; we recommend this. Also, subsets of the index of similarity (again with appropriate weighting) could be developed for *clusters* of data items, such as those describing admission requirements of the paired programs, students served, cost factors, and so on.

Never to be forgotten, however, are the political realties of the difference between desirable and feasible program descriptors, including their weighting. Particularly in an era of institutional fragility, any study of academic programming—voluntary or prescribed—must operate in, but not be overwhelmed by, this environment in which program research must go on.

From the questionnaire and other information sources, three additional indices were developed for the unit records of paired programs. Two described student demand, and a third was a measure of the institutional dependence on the program. They were (a) an index of student demand for program (expressed as a ratio of the applicants for a particular program to the applicants for all paired programs in all disciplines statewide at the same degree level), (b) an index of student demand for location (expressed as a ratio of the applicants for a particular program to the applicants for all paired programs within the same HEGIS classification and degree level statewide), and (c) an index of institutional need or dependence on the program (expressed as a ratio of the full-time equivalent (FTE) majors in a paired program to the institution's total FTE opening fall enrollment in the base year).

The unit record format facilitated the aggregating of data to highlight relationships between and among categories into which programs were grouped, such as degree level, major (2 digit) HEGIS classification, segment or institutional type, educational planning region, and manpower demand classification. In addition, within degree levels, the programs were ranked in terms of their respective index values for the indices listed earlier, and the top and bottom quartiles of these rank distributions were then examined in relation to the categories noted, such as major HEGIS classification.

Neither the research design nor the unit record format are dependent on specific data items, with the possible exception of the latitude and longitude readings, which were furnished on contract by the U.S Department of Commerce. This information about institutional location is necessary in order to construct a distance matrix, which is the basis for determining program pairs. As noted above, only programs which were paired (that is, were within the defined geographic distance from a program with the same HEGIS classification and degree level) were further examined for program similarity. As with the research design and the unit record format, however, the determination of similarity between two nearby programs is not dependent on specific data items.

Also carried out as part of this study was a beginning model for state-to-state comparisons of academic programming, based on nationally available data. Tapes from the National Center for Education Statistics (NCES) provided the data for a pilot comparison of programs in which degrees were awarded in three contiguous states over a 3-year period. Programs for each state were displayed by HEGIS classication and degree level, along with the number of programs in each classification per adult population unit. As another indication of the potential for interinstitutional cooperation, the staff of the project received excellent cooperation from officials in both of these neighboring states as the comparative data were being compiled and reviewed.

Findings

A study of this magnitude, describing over 5,000 academic programs, at five degree levels, in ten educational planning regions, offered by over 200 postsecondary institutions of eight different types, obviously produced myriad findings in response to research questions about the need for, as well as the availability, supply characteristics, and possible oversupply of, degree programs in one of the nation's larger states. Many of these findings are summarized in the text tables of the staff technical report, while others are in the extensive computer files.

In time, the staff technical report and specific findings may be shared with other states. As this paper is being written, however, these findings—as distinct from the research design—are privileged information under the auspices of the voluntary association of institutions which sponsored the study and obtained funds for its support.

Basically, the project provided the institutions with a data resource describing the entire state's postsecondary programs. Data appearing in almost 200 text tables and several appendices of the staff technical report give a factual framework through which institutional and other leadership may view programs in a context of institutional or interinstitutional planning and decision making. The unit record for each program stores a standardized set of information about the program itself, the students served, the institutional setting, and the several indices compiled during the course of the study. Values for each unit record may be aggregated (across programs) and examined in relation to every other unit record item. Also, these program descriptors may be updated, supplemented, deleted, or weighted without altering the format of this basic data resource. The sponsoring voluntary association of colleges and universities is developing guidelines and suggestions for the use of these data.

A few general findings may be shared at this time, related to response patterns and kinds of profiles developed from the data compiled and the analytical model applied.

One of the most important findings, in our judgment, is the evidence from this study that a state's entire community of postsecondary institutions—public, private, proprietary, two-year, four-year, university—will indeed work together in a voluntary study of their academic programming if they believe the undertaking is worthwhile in terms of their own goals and values. Over three-quarters of the institutions to whom questionnaires were sent returned one or more with some, if not all, usable responses. Approximately the same percentage of return held for the questionnaires themselves.

Clear profiles emerged from the model with respect to the academic programs found to be paired geographically on such program specific descriptors as graduate production and manpower demand. Similar descriptive profiles also emerged for the eight educational segments (types of institutions) in terms of proportion of the total number of programs offered in the state, types of programs available (HEGIS classifications), and representation of programs at the five degree levels. A portion of the findings came as something of a surprise to some observers—for example, the fact that associate level programs were offered not only by the community and junior colleges and proprietary schools, but by every one of the eight types of institutions in the state.

Discussion

By concentrating on the pair relationship of degree programs, the study's research design provided not only a mechanism for measuring coexistence but also a procedure for selecting programs to be further examined for evidence of similarity beyond mere geographic coexistence or duplication. The descriptors by which two programs are adjudged to be similar or dissimilar are crucial. Relatively few program descriptors per se, as compared with institutional descriptors from which program descriptors may be derived, are available in federal reporting forms such as the HEGIS surveys. The development of standard program descriptors, as a regular part of state and federal information gathering, is encouraged if other jurisdictions are to carry out studies of their own academic programming without costly and time-consuming ad hoc data gathering. This would also facilitate interstate cooperation in the study of academic programming, especially important where population centers, and thus educational service areas, span two or more states. As noted previously, a beginning was made in this study when the academic programming by HEGIS classification and degree levels was compared for three adjacent states. Data used for this comparison were obtained directly from the annual HEGIS degrees awarded tapes, which are public information. An expansion of nationally available program data would permit other comparisons of value in making decisions about academic programming.

Beyond the question of program data availability is the matter of the relative importance of program descriptors. The question becomes, What is important, and how important, in assessing the similarity of programs which are geographically duplicative? The answers are crucial in responding to still another question: When is program duplication necessary and when it is wasteful? Refining academic program descriptors and assigning weights to them are next steps in advancing the methodology used in this study. The research design includes a systematic procedure for assessing similarity between two geographically paired programs. The results, however, are obviously dependent on the congruence of those program descriptors used with those judged to be essential and appropriate by the individuals utilizing the information for decision making.

Turning to data analysis, it became apparent early in this stage of the study that the several indices were especially valuable in drawing profiles of programs (or categories of programs) when they were used not in isolation but in combination. For example, programs showing high levels of geographic duplication, availability, similarity, graduate production, and institutional need or dependence but low levels of student demand and inadequate manpower demand present a distinct program profile which may suggest attention by institutional planners. A program profile showing the reverse for only one or two of these indices presents a rather different picture. In either case, index profiles may be used for exception reporting to the institutional leadership, not for summary decisions but as a signal for the examination of other information in the program's unit record or elsewhere.

When this project began, there were models available for the first and second phases in the study of academic programming (preparing statewide program inventories and conducting program reviews), but no model for the third phase (analyzing the statewide ecology of degree opportunities). A prototype third-phase model has now been developed with a data base describing one state's programs, their relationships to one another, and to their institutional and societal settings. The fact that a substantial proportion of the institutions participated in this voluntary study of their academic programming and are now working together on ways to make the best use of this data base should be encouraging evidence for those who believe that "the traditional principle of leaving academic programming decisions to the academic community should be preserved." Replication and refinement of this approach to the study of academic programming by our colleagues in other states and regions will be welcomed.

INSTITUTIONAL RESEARCH: A NEEDED DATA SOURCE FOR CONTINUING EDUCATION

Suzanne W. Morse
Spring Hill College
Alice A. McWilliams
University of Alabama in Birmingham

As the lifelong learner concept becomes a reality in our society, institutions are finding that their roles are changing dramatically. Even though education remains our business, it is no longer simply the traditional student who demands our attention. Where the customary student is located conveniently and neatly within the four walls of the secondary school, this new market is spread across the community, the state, and even the region, in households, businesses, and churches. With the advent of this new student population, the ability to provide accurate and complete data on both the new clientele and the potential market becomes a necessity. These data could be maintained by the institutional research office. It will become increasingly important for institutional researchers to be knowledgeable of the scope of lifelong learning in higher education as well as the division on their campuses.

The terms lifelong learning, adult education, continuing education, and recurrent education all suffer from a lack of clarity as they are used in higher education today. The Ohio Citizens' Task Force on Higher Education defined continuing education/lifelong learning as "a term synonymous with or encompassing, adult education, community and public service programs." (Siccero, 1976, p. 54.) For our purposes, we define continuing education students as those people who no longer identify their primary roles to be that of student and who are involved in non-credit programs and/or credit non-degree-granting programs.

The adult learner population has had quite an impact on higher education. According to Gravlich in the *Wall Street Journal* (January 24, 1977), 34% of total college enrollments in 1975 were adults. This represented a huge jump from 1.7 million adults in 1970 to 3.7 million in 1975. By 1980, the Census Bureau estimates that adults could form 40% of the total. Viewed another way, one of every ten college students is over age thirty-five. (Van Alstyne and Coldren, 1977, p. 9).

Due to the change of student population, about one-third of the 3000 colleges and universities in the United States are offering some kind of adult education, which represents a 10% increase since 1970. This trend will undoubtedly continue as our population becomes older. It is estimated that by the year 2000, there will be 80% more adults aged thirty-five to forty-four than at present, and the number of people over fifty-five will be up by 27%. (Gravlich, 1977)

In looking at continuing education in the last quarter of the twentieth century, we are focusing on three primary groups: (a) professional people who need additional education to meet licensing requirements, (b) individuals who need to upgrade their skills for their present job or for prospective employment through enrollment in credit and non-credit courses, and finally, (c) persons who want personal enrichment courses. Although these categories are not all-inclusive, they do represent the scope of continuing education today. Although some latitude exists, there must be a time at which decisions about program direction occur. Hesburgh, Miller, and Wharton (1974) made the point that, given this lack of resources to provide all things to all people, " . . . research is needed, both basic and applied, and too few resources exist with which to carry out the work" (p. 25).

> Stephen R. Graubard (1974) follows this thought by saying that, Higher educational institutions cannot wait for the demand to manifest itself and then respond by offering specific courses (probably in the evening). They ought, rather, to engage in systematic studies of what adults in a society like our own need to know, or would profit from knowing, and seek to make these things available to ever larger groups during the day, at night, on weekends, in the summer, and at many convenient sites. (p.10)

Many of the problems in determining demand can be attributed to three factors: (a) the lack of knowledge among the clientele as to their needs and wants, (b) the lack of expertise/time within continuing education divisions to perform such surveys; and finally, (c) the lack of funds within a university to hire the external expertise needed to gather essential data. Given these problem areas, institutional researchers may play a vital role in assisting the continuing education division in reaching the needs of its constituents. It is very difficult to have a long-term, successful program without data on the potential market and on the success of current courses.

Many areas of research concerning adult learners exist and need to be examined. Locating the market of adult learners is one. Currently, those individuals who participate in adult education programs are those "under age forty, relatively affluent, internally motivated, employed as professionals or managers, and well-educated." (Nolfi, 1976, p. 130) What about those who are not involved in the continuing education/lifelong learning programs? These people must be identified and their needs defined. Why have they not participated? Is the reason financial, fear, uncertainty? Once the total market has been identified, its needs isolated, and the results presented to the continuing education division, programs can be designed to overcome the current barriers. Using data provided by our offices, the institutions can attempt to meet the needs of this population.

As a result of the intense competition and the proven demand, marketing research must be conducted to eliminate some of the unknowns in continuing education divisions. Thus arises the need for an institutional research office to assist this unit in performing a needs assessment for the community. Institutional research is much more than a storehouse of institutional information. It is, in fact, a field that is responsive and skilled. The expertise should be available within the office to serve as an information support unit to the institution and, thus, its assistant to the continuing education division. Phillip Kotler's (1976, pp. 54–72) work on applying marketing theory to college admissions for traditional students can, in part, be applied to the nontraditional student as well.

According to Kotler, the college marketing process comprises seven basic activities: institutional positioning, portfolio planning, applicant development, applicant evaluation and notification, recruitment, effort evaluation, college improvement planning, and alumni loyalty development. Although this marketing process is designed for the traditional student market per se, it does offer a point at which institutional research can emerge as a viable contributor to the continuing education division.

Adapting Kotler's thesis to institutional research, we should be able to address the following marketing functions in conjunction with the continuing education division, within its defined realm of responsibility:

Institutional positioning—This function involves assessing the college's current position in the market in relation to competing colleges (or other organizations); identifying position alternatives in relation to the educational and competitive trends; choosing the position with the greatest long-run opportunity; and finally, choosing a strategy that will help the institution attain the market position in a reasonable length of time. This is the initial stage of the institutional research office's involvement in the marketing of a continuing education division. Primarily, it involves assessing the overall philosophy of having such a unit, given the climate of the marketplace.

Portfolio planning—This function involves determining the types of courses to be offered considering the needs and desires of the market. The institutional research office could assist in this function through the preparation and implementation of in-depth surveys of the market and subsequent analyses of the data. This information will be used as continuing education divisions make decisions on the programs to be offered, expanded, or terminated.

Applicant development—This function hinges, in part, on the work of both the preceding components. The institutional research office would in effect isolate potential candidates for a continuing education course. This could be a contact with accrediting agencies throughout the state for possible professional development activities for their members and perhaps a sample survey of the local population to determine course and learning needs of individuals and corporations. It would be necessary to build a need network in order for businesses to use the institution's continuing education division rather than in-house personnel. These functions would give the continuing education division some of the data it needs to determine future demand as well as to evaluate current offerings. The institutional researcher could assist the institution at large by being aware of the potential market that exists and the complexion of this new clientele.

As institutions expand their philosophies to include the adult learners and what they represent in our changing society, institutional research offices can provide much-needed services to the institution and continuing education offices. One area which can be explored involves those individuals returning to the campus for continuing professional education. Surveying the businesses in a particular area or region can determine if the potential market for promoting more continuing professional education courses is what the business community needs.

Another service that institutional research offices could provide to the continuing education function involves a statewide or regional effort. In conjunction with other offices in a given area, they should determine all adult education that is occurring, whether it be university, college, public, private, corporate, or governmental. This endeavor coincides with Siccero's (1976) recommendation that all institutions within a state—universities, colleges, technical institutes, public school systems, private colleges, and school systems—should have a clear definition of what continuing education is all about and what is to be attempted to meet the needs of continuing education.

A further position of support for continuing education by institutional research is to build a strong case for increased institutional, state, and federal support for the adult learner. Since much of this population attends classes on a part-time basis, it has been denied financial aid, proper counseling, and adequate student services. Yet these students comprise a great portion of the populace being educated today. As decision makers in all facets of education are provided data which show the dramatic impact lifelong learning is having on educational institutions, they will acknowledge the need to include these students in budget priorities.

In considering the more global effects of continuing education, it is necessary, then, to discuss the status and the future of the continuing education unit (CEU).

Accurate and complete records on students, including the awarding of the CEU, are necessary. While the CEU does not yet hold the accepted status of the credit hour, it is, in fact, a recognized measure of participation. (The Southern Association of Colleges and Schools has led the way here.) The National Task Force definition is, "One continuing education unit (CEU) is ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction" (SACS, 1973, p. 2). According to Harrington (1977):

> The continuing education unit is used as the basis for award of certificates or to figure full-time equivalent enrollments in requesting legislative appropriations. The continuing education unit can also provide a basis for turning non-credit into credit, via learning-thru-life experience calculations or by weighing the value of courses taken outside higher education. (p. 87)

Given the importance of this measurement now and potential uses for it in the future, it is necessary that thorough and complete record-keeping devices be established. Data should be kept on non-credit and credit continuing education students that is similar to the data kept on traditional credit students. This would involve establishing data files on each student, with information on continuing education units earned as well as demographic characteristics, to be used in the ways traditional student information is used. Also, it would be used for basic student data for marketing surveys, federal and state reports, etc. The institutional research office could aid in the establishment of such a system in coordination with other units (i.e., continuing education division, registrar, etc.). It is necessary that the institutional research office have input into the system in order to accommodate future reporting requirements at the state and federal levels. Many programs, both in higher education institutions and in other organizations, know little of this new clientele. As a result, it is often difficult, if not impossible, to know geographical areas where individuals are unaware of the program or where certain needs are not being addressed. The institutional research office might function as the area on campus that analyzes the data from the continuing education division to determine, on the one hand, the courses that are in the most demand and, on the other, the descriptive variables on the population attending so as to isolate the groups not attending.

We have prepared summaries of the continuing education programs of our respective institutions which demonstrate what is currently being done in each and the needs that exist in each.

Spring Hill College

Spring Hill College is a private, liberal arts college under the sponsorship of the Jesuit Fathers of the New Orleans Province of the Society of Jesus. Within the last two years, the College has initiated a program of continuing education. Although at this point the focus is non-credit and, primarily, personal enrichment courses, there are plans for a degree-granting addition if resources and commitment exist for development.

The institution is located in Mobile, Alabama with an SMSA (Standard Metropolitan Statistical Area) population of approximately 400,000. The college's enrollment is more than 850, and it is traditional in its programs. Within the SMSA of Mobile are a church-related, liberal arts college; a public university with graduate and first professional programs; several two-year junior colleges; as well as trade/technical schools. The competition offered by these postsecondary institutions, combined with the entrance into the market of churches and community schools, makes knowing the needs of our constituents essential to a continued successful operation.

Since its inception in 1975, the Lifelong Learning Program has shown steady growth. Although the profits have increased considerably during this period, the important point is that numbers of clients have increased. Considering the newness of the program, the indication is that mailings, word-of-mouth information, and media advertisements are effective and that the program's course offerings are desirable.

The program was built upon a revenue-producing mandate. At present, money is not recycled into the program to subsidize small courses. Therefore, courses that do not register a certain number of students are cancelled. Courses are offered because of three main considerations: (a) proposal by person who desires to teach a certain course, (b) substantial desire of a group of people to have a certain course, (c) hit-and-miss suggestions from other schools or from individuals. Although these three reasons represent no systemized way of offering courses, they have proven effective for Spring Hill thus far. These methods have proven adequate with such a young program, but if the Lifelong Learning Division is to expand its non-credit area and move into the credit realm, more valid information must be available to course planners.

Given this situation, what should an institution like Spring Hill do to expand its continuing education program, given very limited resources and no paid staff? Certainly, hopes are that money will be provided by an outside funding source to do a sophisticated marketing survey, pay a portion of the director's salary, and allow for expansion into credit areas. However, if money is not made available, what then? Surrender? Never! There is enough expertise within most college units to addresss some of the problems mentioned. In approaching a similar situation at a college like Spring Hill, what kinds of support can an institutional research office offer? The following represent specific ways to address some of the problems.

1. Within your geographic area, isolate institutions that are competitive in terms of the courses being offered and regional proximity of their campuses to yours. (Course listings are readily available.) From this information, your areas of specialty can be identified as well as types of courses not offered.

2. Construct a questionnaire to be sent to businesses within the area to obtain the following information:
    a. Amount of continuing education required of their employees in both the technical and managerial categories
    b. Types of education needed
    c. Availability of such training internal and external to the company.

These data would help to determine if the institution and local businesses could coordinate efforts.

3. Determine from addresses of previous enrollees the areas of the community from which they are drawn. From this, random addresses from the home census tract can be put on the mailing list to receive information on the program. There is probably untapped interest in that particular area.

4. Prepare a brief marketing telephone questionnaire to be administered by selected students to a random sample within selected census tracts. Census tracts would, at first, be those within a ten-mile radius of the school. Selected information to be asked would be:
    a. Knowledge of the program from media, friends, brochure
    b. Types of non-credit courses of most interest—personal enrichment, professional skills, professional update
    c. Willingness to attend your institution for credit or non-credit
    d. Interest in obtaining a degree on weekends and at night
    e. Cost considerations.

5. Build a profile on current students to be aware of characteristics of persons attending.

Although this represents a peripheral view of the total needs, it does provide a point at which an institutional research office can offer much-needed assistance. The institutional research office should assist in maintaining continuing education units in a systemized way, either in a manual or computerized form. If demographic data is not being kept, record cards should be composed. Spring Hill has an accurate manual system of maintaining records, but many schools may not.

With their ability to be flexible, there is a great future for continuing education programs in the small private schools of our age, given proper support, accurate information, and able leadership. With the expertise institutional researchers have available, there is an opportunity to make a significant contribution.

University of Alabama in Birmingham

The University of Alabama in Birmingham (UAB) began as an extension of the University of Alabama in Tuscaloosa in 1936. It was established as a separate campus of The University of Alabama System in 1966. UAB is located in the heart of Alabama's most highly populated area, with an SMSA population of approximately 800,000.

Hence, it is a relatively young university, with its role and scope dedicated to the concept of education for an urban population. Its 12,000 students are primarily commuters, with almost 40% attending part-time and/or in the evening. UAB's commitment to the adult learner has existed since its inception. Unlike many institutions, adult and evening students who are taking classes at UAB have many of the same services as do the day students.

The Division of Special Studies is the unit within the university which manages the non-credit and nontraditional credit courses for University College, the non-medical portion of UAB. Special Studies provides students with nontraditional modes of learning in cooperation with the appropriate academic unit. Although there is no direct involvement at UAB by the institutional research office, what is being done there could serve as an example for schools whose continuing education division needs assistance.

Two years ago, the new director of special studies initiated a comprehensive campaign to become more knowledgeable of special studies' clients, their needs, and their awareness of special studies' programs. An intensive marketing effort was begun using direct mail, the media, cost/benefit analyses, and performance evaluations. A continuing education information system (CEIS) was established to keep machine-readable data on clients of special studies. Enrollment in non-credit courses has doubled in the last year.

To initiate the marketing effort, the director used the talents of individuals in the graduate program of the School of Business. First, a marketing plan was designed which pinpointed the competition and their courses as well as their strengths and weaknesses. The marketing plan also specified the life-cycle stages of various programs being offered through special studies to aid in the timing of future program offerings and discontinuations.

Second, another marketing research graduate student surveyed a random sample of UAB's market area to determine the feasibility of certain course offerings and certain pricing levels. Several of the programs which had a high success indicator as a result of this survey have subsequently been offered and, as predicted, have been popular courses.

The philosophy of special studies is to be as responsive to the needs of the community as possible. Thus, if a group desires a particular course offering, special studies will attempt to locate an instructor and will handle the logistics of the course. Provided sufficient enrollment occurs to pay for the instructional and administrative expenses, the course is then offered. This responsiveness is not the result of any market research, however.

To use questionnaires and interviews on what particular courses people desire raises a question about the validity of such surveys due to the biases that originate in the survey intrument. For example, to ask if an individual would take course X, Y, or Z immediately constrains the courses to be considered. Yet, most people are limited in their attempts to create or describe courses they want or need. Determining what courses should be offered is perhaps more appropriately based on what the long-term needs of society are. And, as sociologists can attest, this information is not readily attained. Thus, special studies' current methods of establishing courses through specific requests, in combination with using what has been successful in other continuing education programs, is adequate until a long-term needs-assessment instrument is designed.

Concurrent with offering desirable courses is the actual selling of the courses. Special studies markets its courses using a mixture of public service announcements on radio and television, print campaigns in the local newspapers, and direct mail of its brochures and bulletins.

So that a partial measure of effectiveness of the different media forms is attainable, different telephone numbers are used in each form of media. A tally of the number of inquiries received on each telephone line is kept during the week following public exposure to the marketing vehicle. The results of the tally when viewed as a percent response of total viewers (television) or total recipients (brochures) aid in making decisions to change the advertising mix.

After the Birmingham market was examined and a marketing plan devised, the next step was the purging of the mailing list. Two years ago, over 14,000 brochures of courses were mailed each quarter. The names on that mailing list comprised all people who had ever taken non-credit courses. Those who had taken two or more courses received two or more brochures. Due to the complexities of eliminating duplications, many individuals were receiving several brochures each quarter. The director decided that a manual purge of the list was mandatory; this was done during the following quarter. People whose names were on the list solely because of their membership in a club or organization were eliminated since there was no evidence that these people would more likely participate in non-credit courses than any other segment of the population. To update old addresses or to eliminate those which the post office designated as "addressee unknown," postage-paid returns to sender were implemented. The effect of all this work was to eliminate some 10,000 names (and quite a few ineffective mailings) during the year. By spring of 1976, special studies was able to send these bulletins to 10,000 additional homes.

The direct mail campaign is perhaps the most interesting marketing device used. Each term, the course offerings are printed in a tastefully designed catalog. Since direct mail experts maintain that five mailings to an individual are to be anticipated before a sale is made, each name remains on the mailing list for a year before being removed. If that individual registers for a course during the year, he will not be removed until more than a year passes during which he does not register for a course.

Since an analysis of the zip codes of previous course enrollees revealed certain areas that responded much more heavily to non-credit offerings, a great portion of the extra 10,000 brochures were sent to these areas. And a portion was used in areas that had had little or no response in the past. The result of saturating zip codes has been to greatly increase registrations from those areas where registration had previously been high but to have little effect in the other areas.

Press releases (written by special studies' staff) provide free advertising vehicles for non-credit courses. Occasionally special feature articles appear in the newspapers about particular course offerings. This further exposes the Division of Special Studies to the public.

Cost/benefit analyses as well as break-even analyses are constructed each quarter to further monitor the effectiveness of the marketing plans. Performance and course evaluations are used to improve the quality of courses.

While the marketing aspect of special studies was being implemented, a computer-based system, the continuing education information system (CEIS), was begun. Upon the redesign of the registration card, various information about each registrant was computerized. In addition to the basic data of name, address, course, employer, etc., other information is gathered which helps in building a profile of students. The spring 1977 profile, for example, depicts an average age of 32.0 years, with an average educational level of 16.4 years for males and 14.7 years for females. Through the CEIS, special studies can provide a transcript of CEU's earned to any student, in addition to class rolls each quarter and other miscellaneous data.

Even though special studies is utilizing many business-oriented techniques and has a mass of data available about its clientele, the director feels the need for more information. Due to the urban orientation of the University, he wants to offer courses that meet the needs of the elderly and of minorities. Enrollment of these two groups has not grown as rapidly as that of other segments of the population. How these two groups can be accessed is the main problem facing special studies now.

Summary

The techniques used by the Division of Special Studies at UAB and by the Lifelong Learning Division at Spring Hill can be implemented at any institution with the help of institutional researchers. Assuming we possess adequate training, we can help design surveys, analyze population patterns, advise on direct mailings, and assist in the design of reporting systems. What an exciting opportunity exists for us as the lifelong learner becomes reality.

References

DeMott, B. Adult ed—the ultimate goal. *Saturday Review*. September 20, 1975, pp. 27–29.

Gessner, Q.H. Continuing professional education: questions and concerns. *Continuum*. September 1976, p. 13.

Graubard, S.R. Thoughts on higher educational purposes and goals: A memorandum. *Daedalus*, 1974, *103*(4), 1–11.

Gravlich, D.J. Graying of campus. *Wall Street Journal*, January 24, 1977, p. 1.

Harrington, F.H. *The future of adult education*. San Francisco: Jossey-Bass Inc., 1977.

Hesburgh, T.M., Miller, P.A., and Wharton, C.R., Jr. *Patterns for lifelong learning*. San Francisco: Jossey-Bass Inc., 1974.

Kotler, P. Applying marketing theory to college admissions. *A Role for Marketing in College Admissions*. New York: College Entrance Examination Board, 1976.

National Task Force on the Continuing Education Unit. *The continuing education unit*. Washington, D.C.: Author, 1970.

Nolfi, G. The case for selective entitlement vouchers. In D.W. Vermilye (Ed.) *Individualizing the system*. San Francisco: Jossey-Bass Inc., 1976.

Roschwalb, J. Continuing education and the reluctant magicians. *Continuum*, December 1976, pp. 5–7.

Siccero, N.A. The institution of higher education: Its structure in society. *The NUEA Spectator*, June 1976, pp. 52–56.

Southern Association of Colleges and Schools (SACS). *The continuing education unit*, Atlanta: Author, 1973.

Spear, G. The part-time student: Higher education's major client. *The NUEA Spectator*, June 1976, p. 39.

Trivett, D.A. Continuing education for the professions. *ERIC/higher education research currents*. Washington, D.C.: American Association for Higher Education, pp. 3–6.

Van Alstyne, C. and Coldren, S.L. Issues and dollars. *AGB Reports*, March/April 1977.

Vermilye, D.W. (Ed.). *Lifelong learners—A new clientele for higher education*. San Francisco: Jossey-Bass Inc., 1975.

Vermilye, D.W. (Ed.). *Learner-centered reform*. San Francisco: Jossey-Bass Inc., 1976.

A MODEL FOR THE REVIEW AND ABANDONMENT OF ACADEMIC PROGRAMS IN POSTSECONDARY EDUCATION

Joseph E. Gilmour, Jr.
Leland L. Beik
The Pennsylvania State University

This paper describes a model for the review and abandonment of academic programs.[1] As enrollments and resources stabilize and then contract in the 1980s, program deletion will become more important. Curricula will have to be streamlined for cost reduction, increased flexibility, and decreased administrative effort. Resources will also have to be recycled to support new programming initiatives.

We are aware of a number of program review and abandonment efforts both through the literature (Benacerraf, 1972; Gillis and Muston, 1975; Millett, 1973; and University of the State of New York, (1973) and through contacts with colleagues. Our general impression is that none of these undertakings can be described as an unqualified success; in fact, the payoffs from most have not justified the faculty, staff, and administrative effort expended on them. We believe this paper supplements this body of literature and experience in four ways:

1. Most of the processes just noted involve the review of all of an institution's academic program, usually on a five-year cycle. In this paper, we suggest that not all programs require in-depth review and that the effort expended on program review can be reduced substantially through the use of an initial screening process. Through this process, programs which actually need in-depth review are identified and those which do not (the preponderance at most institutions) are dropped from further analysis.
2. Most of the program review and abandonment procedures we have examined focus on the assessment of quality cost benefits, notably difficult variables to measure. Although we do not omit quality considerations from the procedure outlined in this paper, we emphasize the assessment of market demand for the program and program costs.
3. Most of the literature with which we are familiar does not speak clearly or extensively about the complexities of program abandonment. Issues such as marginal cost and program interactions are not well defined. This paper takes some tentative steps toward dealing with these issues.
4. None of the papers at which we have looked deals in depth with the problems of actually abandoning a program. This paper outlines the basic issues which should be considered as a program is phased out.

In the sections of the paper which follow, an existing set of techniques for phasing out weak products is adapted from business disciplines for use in higher education. After brief references to the major conceptual foundations in the discipline of marketing, the techniques are combined into a four-stage system for program abandonment. This system identifies educational programs which are operating ineffectively and provides for phasing out those which cannot be rehabilitated.

Conceptual Foundations

The idea of program review and abandonment is perhaps less difficult to accept if it is understood that most educational programs have a life cycle not unlike that of business products and services. The concept of the product life cycle is well established in the business disciplines. (See, for example: Bell, 1972, p. 620, and Kotler, 1972, p. 429.) Although amplitude and duration vary widely among products, all have introduction, growth, maturity, and decline stages in common. It should be stressed that different marketing strategies are used in each stage of the life cycle. For example, declines are frequently reversed through such strategies as recycling (i.e., product adaptation to maintain current market levels) and taking-off (i.e., introduction of a product into new markets).

The issue of product evaluation has received limited, but nevertheless instructive, attention in the marketing literature. In 1955, Kline noted the lack of attention given declining products. He cited the importance of reviewing all product lines periodically in order to eliminate the obsolete items and to prevent effort from being diverted to products that are low-volume and less profitable. Later, Hurst (1959) suggested ten criteria for product abandonment decisions. Berenson (1963) developed a comparative model for pruning a set of candidate products. The model established two quantitative and three qualitative variables, together with a weighting system, to combine accounting, economic, marketing, and governmental criteria.

In a classic article, Alexander (1964) developed a more complete system for The Death and Burial of 'Sick' Products. In his system, six indicators are used to screen products for further analysis: sales strength, price trends, profit trends, substitute products, product effectiveness, and executive effort. Most of the six have analogous factors for monitoring educational programs. Following this routine product screening, Alexander's second stage consists of a thorough analysis of the selected products by staff or a committee to provide adequate decision information. Proper attention is given to the same six factors, but alternative opportunities, employee relations, long-run benefits for consumers, and phase-out objectives are also considered along with profitability for each unique product situation. Information from the analysis is passed on to executives for the third or decision-making stage of the system. If the decision is to eliminate, the fourth stage considers phase-out problems in detail. Accounting for any holdover demand, timing and the diminishing allocation and reallocation of resources provide further analogies for educational programs.

Kotler (1965) provides a developmental system for Phasing Out Weak Products. A corporate team is established to develop criteria for screening. These criteria are translated into a set of computerized decision rules to facilitate the screening process. A more comprehensive set of criteria and appropriate weights are then developed and entered into a second computer program which provides a standardized retention index. Experience with this index permits the location of automatic cut-off points for dropping products, for requiring further evaluation, or for automatic retention. The latter judgments and possible further evaluations are made by a product review committee. In the final phase-out step, a product may be dropped or phased out slowly depending upon situational factors and the timetable established. This system points out the potential for mechanizing at least the screening process and, with volume, a portion of the evaluation process as well.

For evaluating educational programs, an amalgam of the Alexander and Kotler models would appear to hold promise. It is this amalgam which is developed in the following sections.

Procedure for Program Review and Abandonment

In the sections which follow, a model for the review and abandonment of academic programs is outlined. The model consists of four stages and should be applied annually. Its objective is to identify educational programs which are operating ineffectively and to phase out those which cannot be rehabilitated. The stages of the process include: (1) initial screening, (2) in-depth analysis, (3) institutional-level review and decision making and (4) program abandonment. The flow chart in Figure 1 summarizes the stages of the procedure. The dotted line appearing between stages one and two indicates that most programs do not go beyond the screening stage and that stages two through four are essentially separate from stage one.

Stage one: Initial screening. This stage is completed by a central administrative staff and is designed to pinpoint programs which may be operating ineffectively and which should be considered for possible abandonment. We suggest two relatively easy-to-measure variables and provide some thoughts on combining these variables into a single index to accomplish this purpose.

1. *Enrollment trends:* Program headcount enrollments for the past ten years (as available) are analyzed to determine if an enrollment decline did occur and, if it did, the speed and extent of the decline. We suggest using regression analysis (i.e., the slope of the regression line) to determine speed and computing the actual decline in enrollments during the period to measure the extent.

2. *Increasing costs per credit hour:* The direct cost per credit hour consumed by program students for the past ten years (as available) is analyzed to ascertain whether cost increases occurred and, if they did, the rapidity and extent of the increases. We recommend that forms of analysis similar to those suggested for headcount enrollments be applied in this case. We also suggest that the direct cost per student credit hour figure be computed using only the courses taught by the department which sponsors the program.

3. *Decision index:* Without going into much detail here, we suggest that these variables be combined into a single index to determine whether or not a program requires in-depth analysis. The actual mathematics, variable weighting, and index cutoff points should be set by each institution in accord with its experience with the screening procedure and with its own special circumstances. The objectives of this index are, of course, to provide a comparable screening measure for all academic programs at an institution and to identify a small set of programs requiring further analysis for possible abandonment.

It should be stressed that, in defining these variables, we have not sought factors on which the final decision to abandon or retain a program should rest. Instead, we have defined factors which indicate that the program's continuation should be reviewed, with elimination as one possibility. Further analysis could, and many times should, lead to changes in the program which will revitalize it. The information from this stage, for each program selected for further review, is transmitted on to those involved in the next stage.

Stage two: In-depth analysis. Programs identified in the initial screening stage are analyzed in depth in this stage to establish why they are operating ineffectively. The potential for program rejuvenation is considered along with the costs and benefits of possible abandonment.

The analysis for each program is completed by a faculty committee appointed by the dean of the college responsible for the program. Based on its analysis, the committee makes a recommendation as to whether a program should be abandoned or continued. This analysis and review is passed on for use in the institutional-level review in stage three. Serving ex officio on the committee are a member of the faculty/administrative committee responsible for the third stage and a member of the central administration staff to guide and assist with data collection.

The following sections outline the areas we believe should be considered in the course of such an analysis.

1. *Enrollments:* Why have program enrollments declined? Reasons might include: trouble placing graduates, declining student interest in the suject area, and competing programs.

Can these problems be overcome in a cost-effective fashion? Possible solutions center on increasing the program's appeal, that is, developing a new program speciality, using innovative instructional technologies, cutting tuition, changing the time or location in which a program is offered, improving graduate placement, developing cooperative educational opportunities, strengthening program faculty, or enriching the program curriculum.

2. *Placement of graduates:* Has the proportion of program graduates appropriately placed declined? Why? The qualifier, "appropriately," makes these questions difficult to answer. There are two dimensions to appropriate placement, level and substance. For a graduate to be appropriately placed, he or she must take a job which is generally filled by a college graduate and the substance of which complements the graduate's major field of study. Reasons for a decline in the number of graduates placed can include a drop in manpower demand in the occupational area for which program graduates are trained, obsolescence of the program curriculum, or the entrance of competition from other institutions into the program area.

Can program graduate placement be improved in a cost-effective fashion? A number of courses of action could be taken to solve this problem. They include updating the program curriculum, modifying the curriculum so that program graduates can be employed in related occupations, establishing closer relationships between program faculty and potential employers, and development of cooperative education programs.

3. *Costs:* Ascertaining full program cost is a topic too complex to be dealt with in this paper; it should be sufficient to say that we do not recommend such costing for this level of analysis. We do not even suggest complete direct costing because we believe that the primary costs of a program are centered on the program-essential courses offered by the departments which sponsor it. Thus, the cost data transmitted from the initial screening stage will suffice for this stage as well.

Why have program costs increased? There are several reasons why program cost may have increased: enrollments might have declined, lowering the student/faculty ratio; specialized courses which reduce efficiency might have been added; the faculty might have been over expanded qualitatively or quantitatively; or instructional equipment costs might have increased inordinately.

Are there ways these costs could be reduced without sacrificing program quality? There are several courses of action that might be taken to solve this problem: enrollments might be increased; specialized courses which are not essential might be eliminated; excess or overqualified faculty might be transferred, retrained, or, as a last resort, terminated; equipment costs might be reduced; or cooperative or consortial arrangements might be arranged with nearby institutions to share the burden of high cost areas of the program.

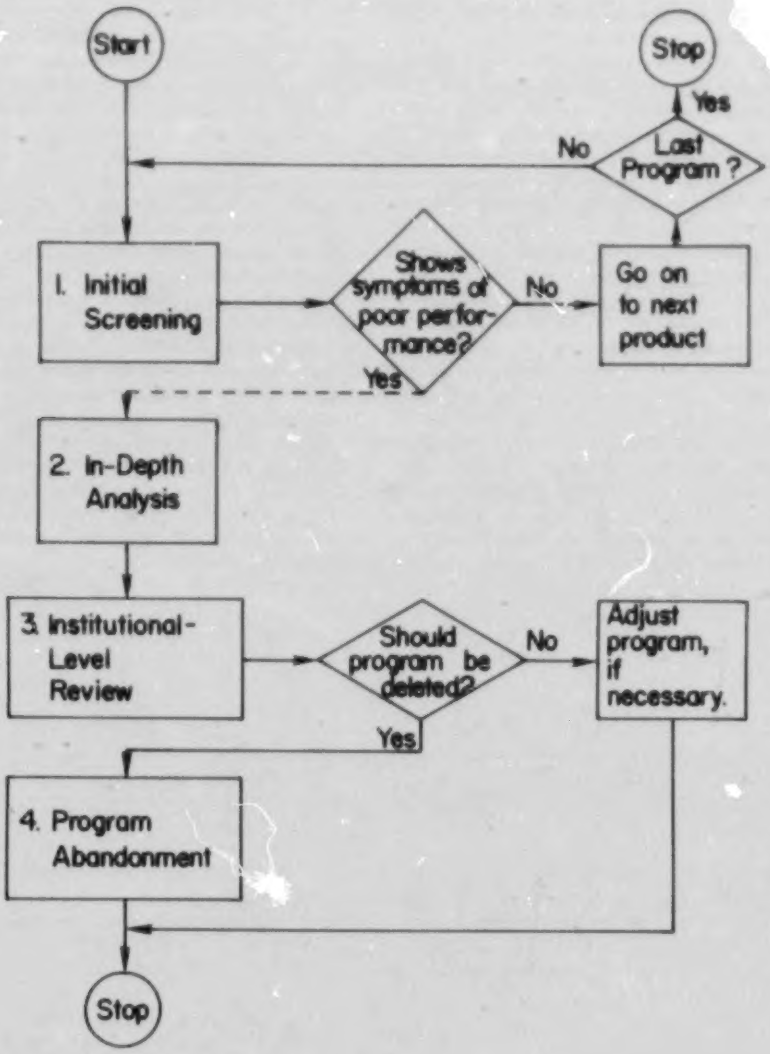


Figure 1. Flow chart of program review and abandonment procedure.

4. *Program productivity:* Is the program productive from a societal perspective? This is an extremely difficult question for the members of a program to answer objectively. Most faculty believe that their programs make important contributions to society. The fact is that the vast majority of programs are not essential. But there are at least two cases in which programs might be considered of vital importance: where the program trains manpower which is essential to the functioning of a sector of society, and where the program is essential to the overall academic program of the institution.

If a program is determined to be essential, then this question should be asked: Is there a better way to deliver the program? Solutions discussed in the section on costs might be considered in answering this question.

5. *Effects on program faculty and staff:* What effect will abandonment have on program personnel? If program personnel can be transferred to positions in other programs without significant loss of income or status, this is not likely to be a deciding factor in the abandonment decision. However, in cases where they must be released from the institution's employ, serious consideration should be given to the effect the action will have on the individuals and on faculty/administration relationships. Such concern for the human factor is natural and highly appropriate in academia. Just how long an institution can continue to operate high cost programs in order to conserve specific faculty and staff positions under today's difficult financial conditions is a difficult question of balance.

6. *Administrative burden:* Does the program consume a disproportional amount of administrative time? Weak programs generally require excessive administrative effort to maintain enrollments, to operate, and to place graduates. Such effort is generally better expended on more promising programs.

Stage three: Institutional-level review and decision making. In this stage, the financial impact of the program's abandonment on other institution programs is assessed by central administration staff, the program-level analysis is examined, and a final decision is made by an institutional-level committee as to whether the program should be abandoned or continued. Because this committee is required to make extremely difficult, subjective judgments about the viability of academic programs, it must be staffed by faculty and administrative personnel who have records of distinguished accomplishment and are known for their ability to make realistic decisions under difficult conditions. Serving ex officio to the committee's deliberations on each program should be a senior member of the program's faculty.

1. *Financial impact of program abandonment on the institution:* The assessment of the impact of a program deletion on the institution's financial structure should address two questions. First, will program expense be reduced more than program income will drop? In considering this question, we suggest that only income and expense attributable to the program-essential courses offered by the department or departments sponsoring the program should be considered. Income should include tuition, general state appropriations, and grants from government agencies and foundations. Expense computations should consider teaching and support manpower, fringe benefits, wages, departmental allotment, and library expense. A comparison of the income and expense totals, of course, provides a measure of the direct budgetary gains or losses from abandoning the program.

Second, what impact would the abandonment of the program have on related programs? The withdrawl of a program frequently has impacts on the departments providing service courses and on related programs which make use of common courses and facilities. In many cases, the net effect is to increase the overhead burden of these courses and facilities, if they cannot be reduced in scope, on the other programs using them. This cost must be considered in addition to the income/expense figure just discussed.

2. *Review of program-level analysis and decision making:* When central administration staff completes its work, the institutional-level committee reviews the program-level analysis and the staff's assessment of the financial impact of the program abandonment on other institution programs. On the basis of these reviews, it recommends to the chief academic officer of the institution whether the program should be abandoned or continued. Table 1 lists the criteria which the committee might consider in making its decision. The table also includes questions pertaining to the criteria, possible answer categories for each question, and illustrative numerical ratings for each category.

After the program has been evaluated on each criterion, the ratings should be combined into an overall program score. We suggest computing the score by adding the ratings together. Cut-off scores for program abandonment should be set by the institution after it gains experience with the procedure.

Table 1

Criteria for the Abandonment of Academic Programs

Criteria	Questions	Answer categories	Numerical ratings[a]
Enrollments	Can the decline in program enrollments be overcome in a cost-effective fashion?	Cannot be overcome. Can be overcome for one to three years. Can be overcome for three to six years. Can be overcome indefinitely.	1 3 5 7
Graduate placement	Can program graduate placement be improved in a cost-effective fashion?	Cannot be improved. Can be improved.	1 3
Costs	Can program costs be reduced without sacrificing quality?	Cannot be reduced. Can be reduced by ten to twenty-five percent. Can be reduced by more than twenty-five percent.	1 3 5
Program productivity	Is the program essential from a societal perspective?	Program is not essential. Program is essential.	1 ?[b]
Effects of abandonment	What effect will abandonment of the program have on program faculty and staff?	Program personnel can be placed elsewhere in the institution. Program personnel cannot be placed elsewhere in the institution.	1 3
Administrative burden	Does the program consume a disproportionate amount of administrative time?	Consumes a disproportionate share. Does not require a disproportionate share.	1 3
Financial impact of program abandonment on other programs	Will program expense be cut more than program income will drop?	Expense cut more than income. Income cut more than expense.	1 3

[a] Each criterion should be weighted by an institution in accord with its special needs.

[b] This score should be equal to the minimum overall score necessary for a program to avoid abandonment.

Stage four: Program abandonment. In the final stage of the process, phase-out plans for programs to be abandoned are made, implemented, and monitored by a central administration staff. These staff members are provided with the proceedings from each of the earlier stages. The smooth execution of this stage, with concern for the human factor and at a minimum of expense, will play an important role in reducing the fears and negative feelings currently attached to program abandonment.

The stages of the phase-out plan and a timetable for its implementation should be tailored to the program's special circumstances. Some of the factors which should be considered in the plan's development follow.

1. How long must the program be operated until the students currently enrolled are graduated?
2. How soon can affected faculty and staff be shifted to other programs? Will some personnel require retraining in preparation for these shifts? Can others be retired early? Will still others have to be released and, if so, what outside assistance and severance pay arrangements must be made for them?
3. Can program facilities and equipment be recycled for use in existing or new programs? When can this be accomplished? If facilities or equipment cannot be recycled, what would be the most advantageous way for the institution to dispose of them?
4. Into what existing or new programs will the resources from the abandoned program be recycled? Can the phase-out of the abandoned program of the resource recycling be coordinated so as to minimize the disturbance to those involved in the abandoned program and maximize the programming opportunities of the program receiving the recycled resources?

With the answers to these and additional questions, the plan is developed. The extensiveness of the plan should be related to the complexity and size of the program. The plan should be drawn up in such a way that the abandonment of a program causes the least disturbance to those involved in it and to the operations of the institution.

Final Observations

The procedures we have outlined in this paper develop a model for the review and abandonment of academic programs. We fully expect that institutions which apply the model will adapt it substantially to fit their special circumstances. We strongly recommend that they do so.

We fully recognize that successful implementation of the model will require strong backing from top administrative officers and adept political handling on the part of all of those involved. We believe that many institutions will need a procedure similar to this one because their leaders—the administrators and faculty—will see it as a step they must take to insure that their organization is prepared for the uncertain and difficult years which lie ahead.

Footnotes

[1] Program is defined as an officially designated major which leads to the awarding of a degree at any level.

References

Alexander, R.S. The death and burial of 'sick' products. *Journal of Marketing*, 1964, *28*, 1–7.

Bell, M.L. *Marketing: Concepts and strategy* (2nd ed.). Boston: Houghton Mifflin Co., 1972.

Benacerraf, P., and others. *Budgeting and resource allocation at Princeton University: Report of a demonstration project supported by the Ford Foundation*. Princeton, N.J.: Princeton University, 1972.

Berenson, C. Pruning the product line. *Business Horizons*, 1963, Summer, pp. 63–70.

Gillis, A.L. & Muston, R.A. Program evaluation: from question to impact. *Proceedings of the 15th Annual Forum of the Association for Institutional Research*, 1975, pp. 322–327.

Hurst, D. *Criteria for evaluating existing products and product lines* (Management Report No. 32). New York: American Management Association, 1959.

Kline, C.H. The strategy of product policy. *Harvard Business Review*, 1955, pp. 1–7.

Kotler, P. Phasing out weak products. *Harvard Business Review*, 1965, pp. 107–118.

Kotler, P. *Marketing management* (2nd ed.). Englewood Cliffs, N.J.: Prentice-Hall, 1972.

Millett, J.D. *Resource reallocation in research universities*. Washington, D.C.: Academy for Educational Development, June 1973.

University of the State of New York. *Meeting the needs of doctoral education in New York State*. Albany, N.Y.: New York State Education Department, January 1973.

MANAGING IN EQUILIBRIUM: THE ROLES OF PLANNING AND INSTITUTIONAL RESEARCH IN THE STEADY-STATE

Dwight C. Smith, Jr.
Wendell G. Lorang, Jr.
State University of New York at Albany

During 1975 and 1976, the University of Albany was forced to reduce its teaching faculty by 33 positions, or approximately four percent. That goal was reached through programatically structured retrenchment. Choices were made on the basis of results of a campus-wide assessment of academic programs, an assessment that used eleven criteria of quality and appropriateness. The immediate results of this process were the elimination of two schools and two departments as well as the reduction of programs offered from 129 to 111. In comparison with other retrenchments, notably that of the City University of New York, our obligation was not remarkable in a strict numeric sense. But the cuts were deep enough to persuade us that, in addition to making specific program decisions, the entire process by which resources are managed should be considered. Thus, the longer range result was a commitment, within the expectation of a continuing equilibrium budget, to the planned development and strengthening of the program offerings that remained.

That commitment requires more than verbal assurances for its implementation. For example, which departments should be developed and strengthened? Where do we stand now? Have previous resource allocations met the desired purpose of development? Is there a proper relationship developing between trends in enrollment, program quality, and resource allocation? These questions are inherent in any university management, but our experience has shown that in times of growth there is a higher level of tolerance associated with both question and answer than can exist in a no-growth period. A steadily increasing faculty carries with it a forgiveness factor: if the allocation of new positions in one year has not led to a qualitative increase in a given department's faculty, there will always be another chance to obtain quality with the next year's allocation. In times of growth there is also a tendency toward less stringent examination of qualitative change: if the institutional research office's efforts are directed toward support of budget growth, it may not (or need not) spend much time assembling data pertaining to the harder questions of accomplishment. And, after a period in which faculty and administration have become accustomed to growth and to an expansionist view of the future, who wants a tighter managerial rein?

As we began to think more seriously about planned development, it quickly became apparent that there is an underlying theoretical process from planning through budget allocations to activity analysis and evaluation, a reexamination of goals, and a further look at allocation levels. Since the process should be a continuing one that rapidly becomes a feedback loop—as the results of one cycle form a foundation and starting point for the next—the process seems virtually self-evident. Sound administration, with predictably good prospects for program development, could thus be instituted rather easily by a more conscious amalgamation of the process into a structured and coherent managerial style.

Few campuses are so self-contained and self-sufficient that they can ensure such control of the environment that an integrated management system could automatically succeed. But, even granting a measure of uncertainty and a willingness to tolerate attendant ambiguities, could not the process be implemented with a fairly simple set of procedures?

Not quite, and the purpose of this paper is to describe how we have found this to be the case. Our principal discovery has been that the integrated managerial process is a secondary characteristic of administrative activity. More importantly, each step in that process has a cyclical life of its own that is independently, and often externally, governed. The integrated process is still needed, and institutional research bears a heavy responsibility for developing and supporting it. If we are to make a success of it, we have to begin with a clear grasp of the dynamics by which each of the planning-managing-evaluating activities is governed. That task has been one of our principal objectives this year and now we would like to describe our efforts to complete it, beginning with an overview of the separate activities that faced us.

The Administrative Mosaic

There are seven principal activities on campus that comprise the nucleus of an integrated management process. The first and oldest—and the one most circumscribed by policies, procedures, and traditions—is *campus budgeting*. It is an overlapping, three-year process which, because of the state fiscal system and its heavy emphasis on accountability, has always had an external focus. The timetable and structure of the process, as well as its content, are determined off campus by the central staff of the State University and by the New York State Division of the Budget. Line item control, expenditure ceilings, pre–and postaudit are the more noticeable elements of the financial environment which contribute to our limited financial flexibility and heavy paperwork load. But, from an integrated management perspective, the most evident consideration is its basic timetable. The state fiscal year starts on April 1, and our accounting and budgeting systems conform to that even though the academic year runs from September to August. This automatically creates timing problems which are evidenced, particularly, in resource allocation, the second of our principal activities.

In our circumstances, *resource allocation* has less broad implications than is usually the case because resources are provided to the university by specific category (faculty, staff, supplies, and equipment) and by purposes for which they can be used (instruction, general administration, maintenance, and operation). This is a significant factor in limiting the flexibility of campus management. Because our campus is also governed by a fiscal year that begins April 1, we have traditionally been handicapped by having only minimal lead time for making allocation decisions and for the recruitment efforts that follow. There is generally less than six months advance notice of available resources before the start of the academic year in September. Consequently, tentative allocations and recruitment must begin prior to final budget clearance. Also, the year-by-year approach to budgeting has meant that allocations are governed by a similar short-range view.

Enrollment planning is our third major activity. It is an obvious component of a formula-based budget system, but in that context it has been limited by short-range targets and campus-wide focus. (Additionally, we were limited in previous years by a SUNY policy that projections, once submitted to the legislature, could not be changed, even in the following year when additional data, then available as a projection base, did not match the previous year's assumptions. The policy guaranteed discontinuity in budget projections). Longer range and more detailed projections were a function of capital planning, which was historically semi-independent from academic planning. The capital plan reflected external political expectations of growth—as evidenced by their survival well after the hard facts of a declining enrollment pool became known—and enrollment projections were calculated to fill buildings, not to guide departmental development.

Enrollment forecasts had some bearing on our fourth activity, *master planning*. A quadrennial plan is required of every public and private institution of higher education in New York State; for SUNY, a single, comprehensive plan is prepared. By emphasizing a positive look at the past and an optimistic gaze into the future, it is designed primarily to educate external readers. Its rhetorical style, the absence of campus identity and participation (after submitting the required preliminary paperwork), lack of meaningful feedback to campus input, and the lack of realism in discussing enrollment and finances has meant that, even though the document may be externally persuasive, little campus benefit or purpose is seen or derived from the process. Its external focus is not, and cannot be, specific or pertinent to campus planning or decision making. It is well that it is not, for each institution, like Albany, needs to set forth its own master plan and develop a process of implementation.

Since 1966, in addition to enrollment reporting, the senior institutions of the State University have participated in a centrally designed *workload analysis* project. Called the Course and Section Analysis (CASA), it is a line by line description of every section taught in the fall semester. Each section is described in terms of department, HEGIS discipline, instruction type, credit value, scheduled day/time/room/building, number of students by level, instructor and instructor contact hours in section per week. The project works by having the campus submit raw data to the central staff, which "owns" the analytic programs; ultimately the results are returned to us.

The cumbersomeness of a multicampus system meant originally that analytic results were never established before the beginning of the next academic year. Campus demands for faster service were ultimately heard, however, and Albany now receives its own results six months after the semester begins.

The full SUNY report is not available for several more months, and when it does appear, it suffers from a lack of timeliness and from an overwhelming amount of uninterpreted and incomparable data. Even improved turn-around time for local data is insufficient, however, as allocation commitments, for recruiting purposes, must be made earlier in the academic year. In addition, the analytic routine focuses on comparisons across departments rather than development over time and the data encourage jostling over increasingly limited resources. Most importantly, however, in the absence of established program priorities, faculty workload data, as well as enrollment trends and pressures, are not sufficient for making resource allocation decisions.

Graduate program *self-studies and external reviews*, the sixth activity, in our managerial process, have been a departmental effort, internally defined and operated, for the last ten years. Each program is reviewed on a five-year cycle, which can be altered as necessary to accommodate accreditation visits. Reviews have focused upon departmental assessment and self-improvement without significant relationship to campus development. Only with the arrival of steady-state budgeting has the activity been seen as useful to the setting of campus priorities and to the establishment of allocation levels. As that value has emerged, however, external forces have moved to coopt the process. For example, the State Education Department has used its authority for approval and registration of academic programs as a justification also to reassess and to exercise a perogative to close a program it doesn't like. The result has been a statewide, public and private, review of doctoral programs. The review has been an attempt to assess all programs in a given discipline by statewide comparisons; programs are then labelled either as satisfactory, not satisfactory, or recommended for termination. As a result, the review has become a weapon of the unsympathetic outsider who, by altering the purpose of the review, threatens the university's ability to set and follow its own priorities.

It is appropriate that *information systems development* is last in our list of activities needing to be drawn into a campus-defined managerial process. It is an activity that has been greatly influenced by the other six. The combination of external requirements and individually perceived internal needs has resulted in system development efforts that focus on the transactional activities of each administrative office rather than upon campus-wide management uses of data. Individual office needs have predominated, often heavily influenced by external requirements. In at least one case, an information system began as a result of our initiative b[illegible]s rapidly reoriented to satisfy external needs. The syste[illegible]lace, but it has not been meaningfully integrated into [illegible] operations, and the campus has not been able to re[illegible]ts management and planning potential.

In summary, we had accumula[illegible]inistrative activities which had been designed to [illegible] the beat of an external drummer. How, then, could we meet our recognized responsibility to account for the use of state funds—and also meet our responsibility to plan and manage the institution? This was the challenge facing us as we began to think seriously about an integrated management process.

Developing an Integrated Process

It is not difficult to see how these seven ongoing campus activities ought to fit together to form an integrated management process. Operationally, however, there are considerable barriers to its implementation. The easy and logical conceptual flow from one activity into the next stands in sharp contrast to the uncoordinated and independently directed reality we have just described. The conflict can be appreciated simply by comparing the schematic outlines of theory and reality in figures 1 and 2.

Our desire to impose logic and integration on these activities has remained firm despite the conflict, and a solution is gradually emerging. It has four components, three of which have been necessary operational steps and one a conceptual reorientation in our approach to data.

The first step was an *administrative reorganization*, through which a new office of information and planning was created within the Office of the President. Its two components, now brought together for the first time, are the Office of Institutional Research and the Computing Center, which includes a staff for administrative systems development. These units provide critical support for an integrated management process; but, previously, they had functioned with more independence than the process merits. Institutional research had been heavily influenced in

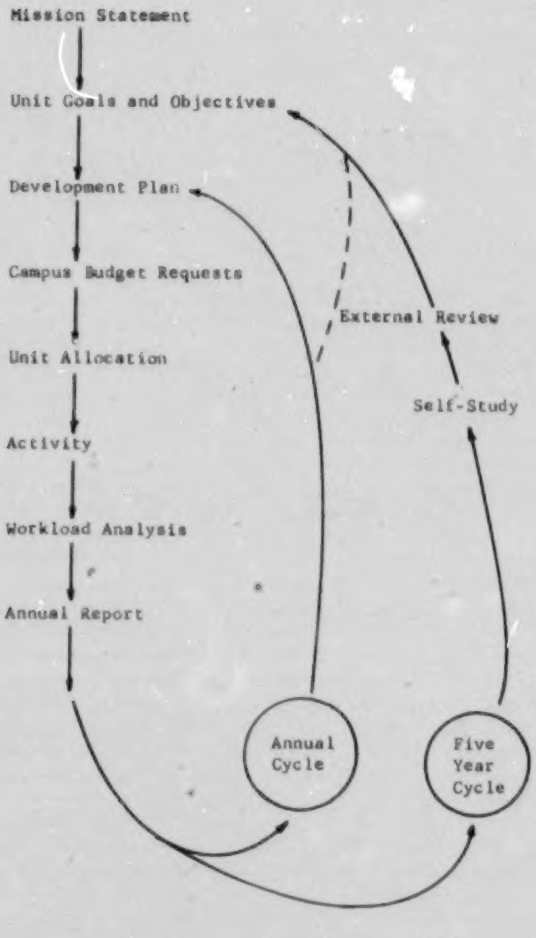


Figure 1. An integrated management process for the University at Albany.

the past by external reporting requirements. The administrative systems staff had been concerned primarily with transactional activities of the registrar, bursar, and other administrative officers. Staff attention can now be focused, through leadership of the president's office, on support for campus planning, institutional management, and program evaluation.

A commitment to the planned development and support of academic programs requires more than staff integration. The second operational step was to develop a clear statement of *institutional goals and objectives* to guide the long-range management of the university. A campus mission statement has been the principal vehicle for doing this. It is a broad framework, intended to enjoy a degree of permanence within which individual units, academic and administrative, can identify their particular long-term goals and development strategies. The mission statement was developed in 1976; upon its completion, three-year development plans were prepared by each department and office on campus. They are now being reviewed by the president, in conjunction with appropriate vice presidents and deans, and with the advice of the Council on Educational Policy of the University Senate. (It should be noted that the council also played a key role in development of the mission statement itself.) Taken together, the mission statement and development plans provide the starting point for a process that will link ongoing campus activities with a strong and stable future.

The third operational step in the development of an integrated management process has focused more directly on our approach to information systems. Our current systems are a conglomeration of computer-based routines, each of which was designed to meet the particular needs of specific offices. We have broken from that tradition and are well into a new approach that has its focal point in *campus-wide sytems development*. We are now concentrating on two primary development efforts, one dealing with student information and the other with financial information. Each has its own steering committee of representatives from each office that needs access to student or financial information. The steering committees overlap; the bursar, for example, is involved with both groups. The campus-wide approach represents a commitment to systems that will support transactional, analytic, and planning needs for information.

The final component in our approach to an integrated management concept has been a redefinition of the context within which management information is used. We call it *the informed environment*. The informed environment is one that supports the formulation, implementation, and evaluation of institutional policies and procedures. It supports this process not through a one-to-one correspondence between selected pieces of information and specific decisions but rather through the existence of a longer term understanding by decision makers of institutional development and the information used to describe that process. The information obtained from current operations supports the process primarily by contributing to a long-term body of knowledge. It is upon this body of knowledge that the institution relies for support of specific decisions and, in so doing, is freed from the constraints of the current timetable of data collection, editing, analysis, and presentation.

The informed environment concept provides a new perspective for viewing the administrative activities of the campus, one that opens up alternative solutions to the problems of disjointed timing and external control. We have learned, for example, that not all externally determined timetables need hinder campus activity. Instead, we can develop an institutional memory that informs us of the likely significance of preliminary or fragmentary data about current events and enables us to make current decisions or future commitments. We still must conform to the state's fiscal year for budgeting and subsequent allocations. But, by assembling appropriate trend data on enrollments and faculty, and by placing them within a campus-wide framework of development goals and priorities, we can bring greater wisdom to those times when recruitment commitments need to be made. In addition, the continuing presence of that institutional memory becomes the framework for keeping track of those commitments. Our present sense of position can also be enhanced by a continuing appreciation of past workload characteristics that enable us to identify continuing trends or possible anomalities through preliminary signals of current data. How, for example, have spring enrollments differed from fall enrollments?

The consequence of the informed environment is a continuing body of knowledge, not simply new reports. This objective has a profound influence on the institutional research function and upon information systems development. Our responsibilities stretch beyond short-range data targets and the manipulation of current data for current needs. As a result, we are better prepared to support both planning and evaluation and, by supporting them, to improve the information climate within which institutional management occurs.

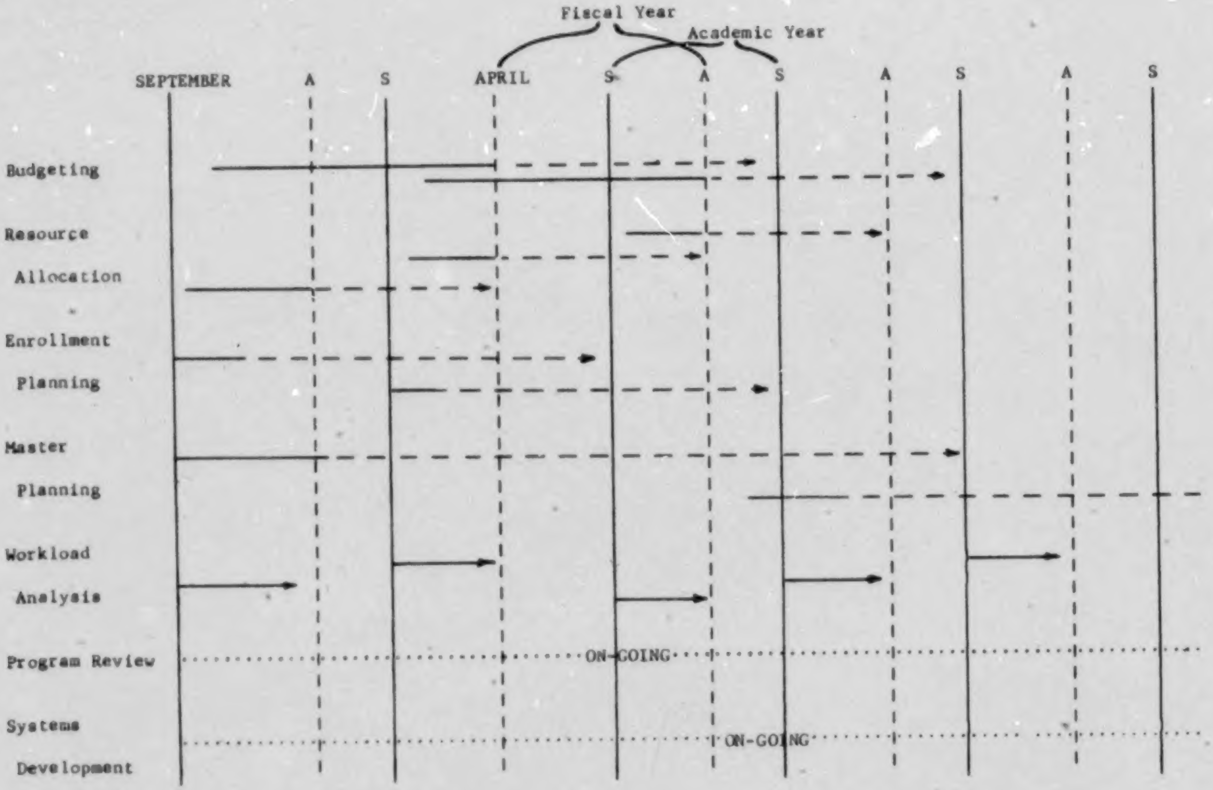


Figure 2. The administrative mosaic of the University at Albany.

A CONCEPTUAL MODEL FOR EVALUATING PUBLIC SERVICE ACTIVITIES

Robert E. Sellers
Larry G. Jones
The University of Georgia

Evaluation and University Public Service

While it is generally accepted that teaching, research, and service are the three primary functions of a university, the service function of the university's mission has usually received less attention than the other two. In part, of course, this lack of attention is due to the fact that only lip service has been given to the service function by many institutions and not much real effort or support has gone to service programs. In other cases, notably the land grant colleges and universities where service has been a major concern of the institution, the continued support and encouragement of federal and state governments through funding and program development has placed the service activities in an almost independent status, beyond the normal review of the academician.

While the service activities of colleges and universities have typically gone unchallenged, it is true that those responsible for service activities have been concerned about the effectiveness of their programs and have conducted evaluations to determine the success of their efforts. It is equally true that funding sources and other interested parties have also been asking for indicators of the success of these endeavors now that a variety of university needs are competing for scarce dollar resources. University public service must show accountability to legislators, governors, taxpayers, boards of regents, and institutional administrators as well as federal funding agencies. The public service function of the university is now clearly subject to the same pressures for evaluation and accountability that the teaching and research functions have previously encountered.

In spite of the intense interest of educators in evaluation, as witnessed by the recent attempts to apply the techniques of management by objectives (MBO), planning-programming-budgeting-systems (PPBS), cost/benefit analysis, zero-based budgeting, and social indicator analysis to the educational setting, a review of the literature and research reveals that formal techniques and methodologies for the evaluation of service activities and programs, which account fully for the unique aspects of the service mission, have not been adequately formulated or developed.

The only real measures of accountability of university public services, to date, have been tied to performance. Man-hours of effort, numbers of people attending training sessions, numbers and types of local governments being assisted, and dollar costs for programs and services are typical of the measures used to indicate achievement. In the past, such measures were adequate to insure the continued flow of support for maintaining and expanding the public service role of universities. Inflationary costs, however, have considerably reduced the flow of resource money (in terms of real spending power) and with these rising costs has come a demand for more meaningful measures for evaluating the worth or value of the public service endeavors.

Definition of Evaluation

Evaluation means different things to different people and may even take on different dimensions in different settings depending on the situation and what is being evaluated. These variant veiws form a continuum. At one extreme on the evaluation continuum is the entirely subjective "gut" feeling that a good job is or is not being done, while at the other extreme is the completely objective position that evaluation must meet the test of scientifically controlled experimental research. Between the two extremes are combinations of the subjective and objective where evaluation may be equated with the simple monitoring of projects and activities or where an even more formalized statement of objectives may be coupled with criteria for measuring performance and/or impact.

Basically, evaluation involves making decisions as to the worth or value of something, and most definitions of evaluation explicitly or implicitly contain the concept of value or worth. But evaluation is also viewed as a process to aid decision makers in making intelligent decisions. Both of these concepts are embodied in the evaluation methodology being proposed here.

Purpose of Evaluation

The basic purpose of evaluation is to provide meaningful information to decision makers. In the context of university public service, evaluation can serve to aid both internal and external decision makers. Internally, the evaluation could be used for self-improvement or to determine priorities for allocation of resources. Externally, evaluation could serve to examine certain dimensions or characteristics of an institution's public service efforts. The results, based either on individual dimensions or in some weighted combination, could then be compared to corresponding results from other similar institutions or to some standards or expectations.

The specific purpose for the evaluation will depend on who wants and uses it. Ideally, the evaluation effort should reflect the intent of the decision maker who is looking to an evaluation for objective aid. For example, a funding agency may want evaluation which can be used as a basis for comparing the public service achievements of one university with those of another. Again, a university vice president for services may want the evaluation of his university public service component in order to determine whether and where improvements can be made. Clearly, the evaluation emphasis would be somewhat different in the two instances.

An Evaluation Methodology

The proposed evaluation methodology has three basic components as shown in Figure 1: a program component, an institutional capability and commitment component, and a user component.

Although each of the three components can be administered as an independent element, the usefulness of the evaluation process is enhanced by combining data from the three components to develop a pyramid of evidence to aid the decision maker. For example, suppose that a funding agency is considering whether or not to support the development of a specialized training package at a given university. Based on the capability and commitment component, evidence may suggest

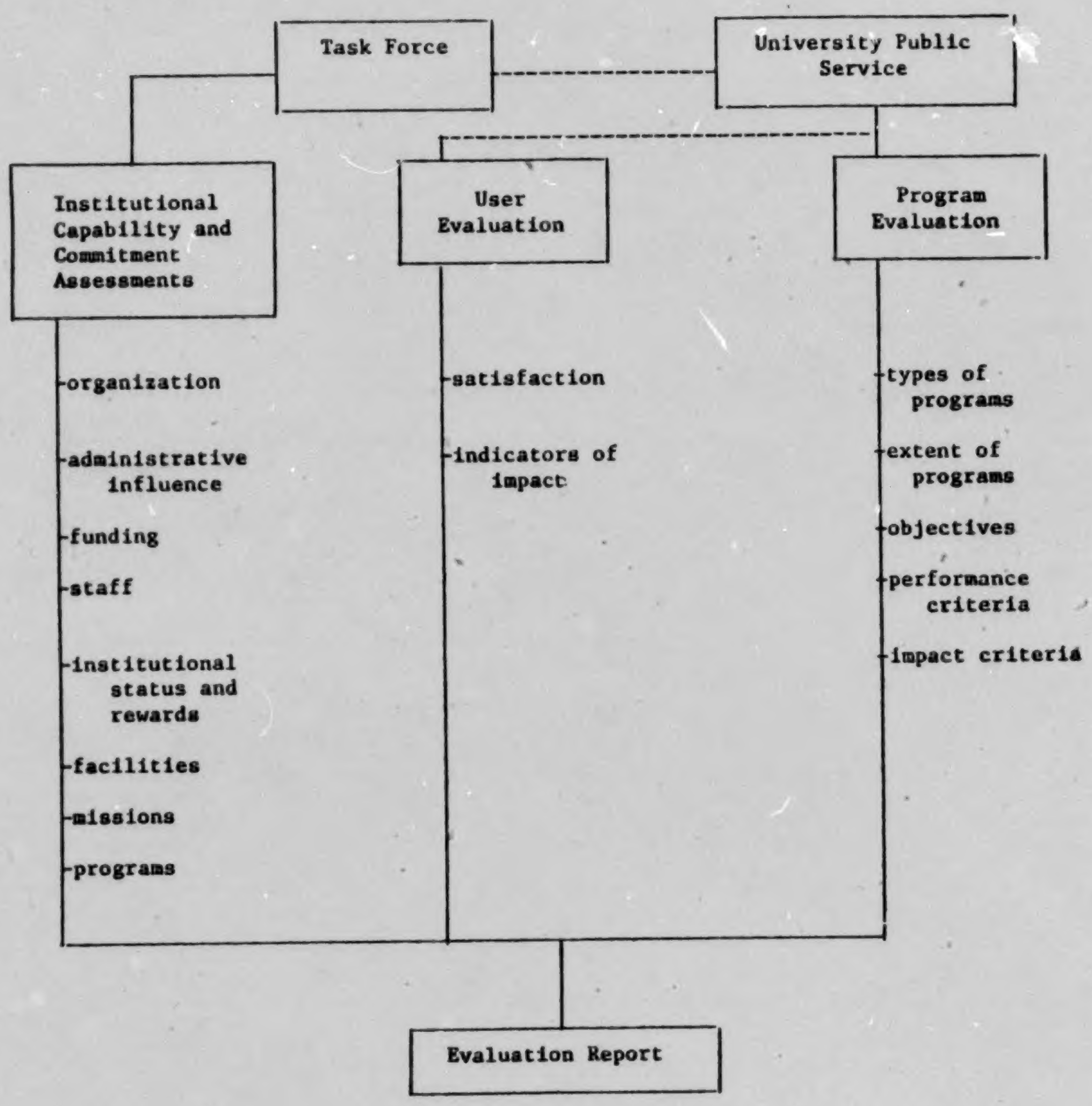


Figure 1. Overview of evaluation process.

that the university has adequate facilities, staff, and commitment. The program component may yield further supportive evidence by showing that the training unit has been highly successful in reaching target audiences during the past year. The user component may also provide positive input when users testify to the benefits derived from their previous training experiences with the university.

The program component attempts to establish user-related objectives and criteria against which to measure the impact of university public service efforts. Input obtained from the user component will enable university public service staff to know whether these user-related objectives are consistent with the users' needs and problems. At the same time, the commitment and capability component can provide information about the university's mission, organization, funding, etc., which also serves to guide professional staff in their program development.

The Program Component

The program component is intended as a self-evaluation designed to be used internally by an institution. It is aimed at assisting institutional decision makers to logically and systematically assess the value or worth of their public service endeavors. Through a continued application of this mechanism to critically review and analyze its service program, the institution should be able to improve its overall performance and effectiveness. This process will also enable the institution to better understand and communicate the following:

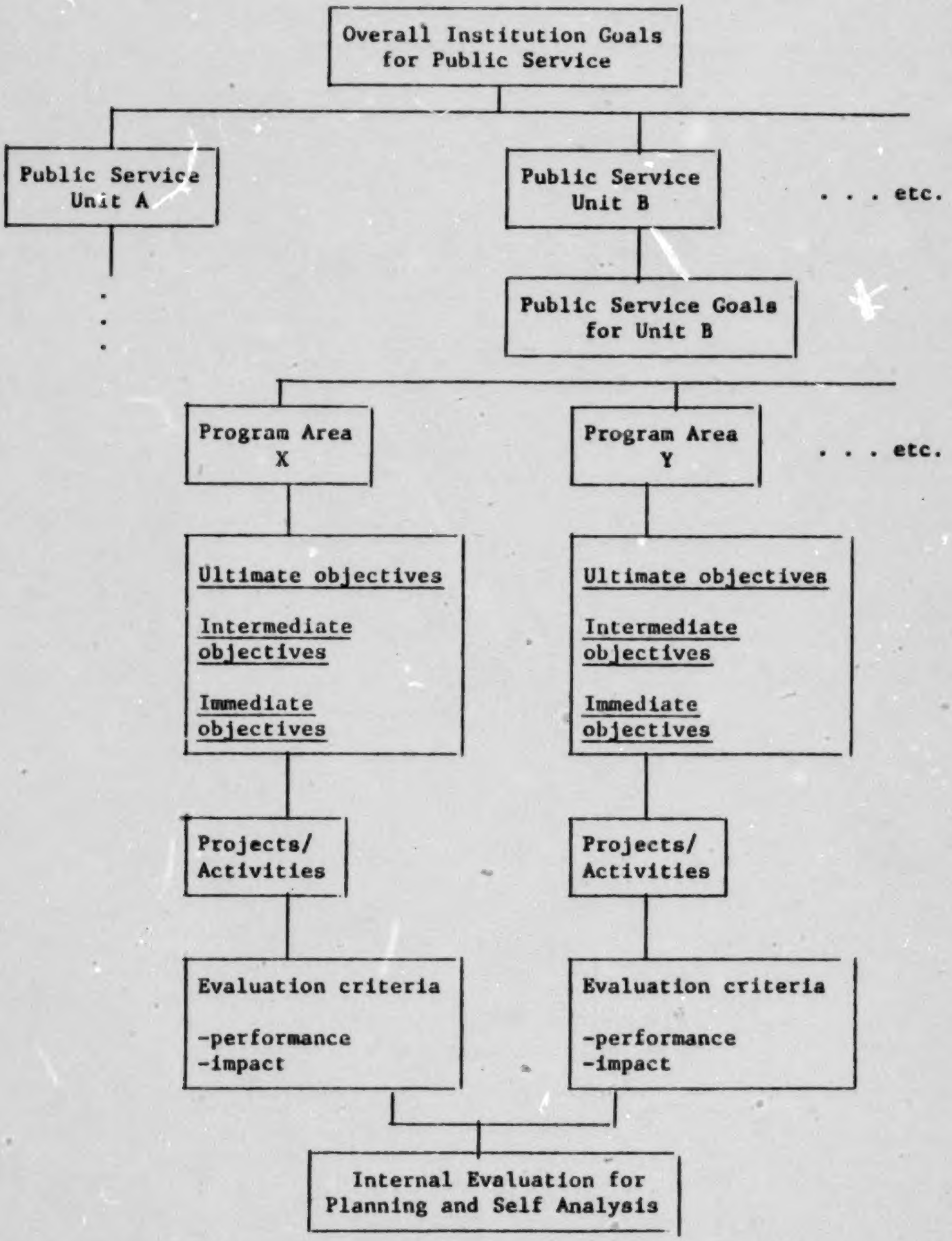


Figure 2. Program evaluation framework.

1. What the institution is doing with respect to public service
2. Why the institution does what it does
3. How the institution goes about its public service work
4. What degree of success it is having in meeting needs and resolving problems in each of its public service program areas.

The conceptual framework for this component is shown in Figure 2. The process incorporated in this framework consists of the following steps:

1. Identify overall institutional goals for public service
2. Identify public service goals of various units involved with public service (centers, institutes, departments, etc.)
3. Identify program areas within respective units

4. Establish objectives for each program area
5. Indicate projects and activities undertaken to satisfy or achieve objectives
6. Determine evaluation criteria which will measure achievement of objectives.

Articulating institutional and unit goals is important not only to the program component but to the other two components as well. These goals identify why public service exists at the institution and indicate what each unit is attempting to accomplish. Although these overall goals need not be stated in specific, measurable terms, they should be stated in such a way that one can determine whether progress toward these goals is or is not being made.

The process assumes that each unit involved in public service performs its work activities within a framework of program areas or, at least, that its work activities can be classified in some way. Criminal justice, governmental finance, management training, and engineering might be some examples. It would be expected that a given institution would have a unique set of program areas. The differences between institutions are the result of a combination of factors such as institutional goals, staff, and available resources.

In the evaluation process, objectives are defined as an end product or end condition desired at some future time. Objectives must be understandable, achievable, and measurable. Figure 2 shows three levels of objectives for each program area: ultimate, immediate, and intermediate.

The first, or highest level of objectives is called the ultimate or long-range level. These objectives go beyond what the institution or university itself can do directly in its service role. For example, the university is not a governing body, yet it may have as a legitimate, ultimate objective to increase the efficiency and effectiveness of local government. The university cannot directly effect this condition. Ultimate objectives are basically user- (or client-) related objectives.

A second purpose for this level is that it will enable the university to see, over a period of time, whether, and to what degree, desirable goals are being achieved. The university will, thus, have the means for evaluating itself on a longitudinal time basis in terms of its impact on long-term problems and needs.

In addition, given well-expressed ultimate objectives, the institution (or public service unit) should be able to distinguish between effective and ineffective programs—again in terms of long-range desired impact. Information will thereby be available for decision makers to make timely planning decisions regarding continuation or proliferation of programs within its sphere of influence.

It is recognized that the programs and projects of the institution are not the only contributors to these long-range, client-centered objectives. Programs of other agencies, together with a number of uncontrolled factors, have impacts on these same objectives. Consequently, precise judgments as to cause and effect relationships between the institution's programs and the observed changes cannot generally be made using this evaluation component. However, the process does provide decision makers with the knowledge that their objectives and program intents are, or are not, consistent with the observed changes that are taking place in the real world.

In contrast with ultimate, user-centered objectives are the immediate objectives where the institution affects or influences in a direct way. These are, in fact, university or program objectives. Immediate objectives need to be stated in measurable terms and should include a specific time frame for completion. They should relate directly to projects and activities undertaken by the institution or public service unit. They give direction to planned activity in all of the institution's functional work areas—applied research, technical assistance, and training.

These objectives should also define results, or end products to be achieved, and not activities to be performed. Finally, they ought to bear a logical and consistent relationship to the ultimate objectives. This may require some assumptions or a "logical leap" between the two.

Intermediate objectives bridge the gap between that which the institution can influence directly—the immediate objectives —and that which it can only affect indirectly—the ultimate objectives. In many cases, this intermediate level is unnecessary, but in other instances it is a useful level to reduce a complex ultimate objective into meaningful substantive components.

After defining objectives, the next step is to identify projects and activities required to carry out the immediate objectives. These projects and activities, in turn, become the basis for enumerating *performance measures* which, in the self-evaluation model, are measures of work output. Performance is simply a measure of the extent of effort or the number of activities completed. They are "means" oriented. Examples of performance measures might be the number of training sessions held, publications prepared, number of technical assistance visits made, or number of man-months of effort. It should be noted that both the lists of projects/activities and the performance measures relate directly to the immediate objectives in the hierarchy of objectives.

The final step in the self-evaluation model is to establish impact measures. Such measures should be designed to give an idea of what effect the work is having on the direction of the stated intermediate and ultimate objectives. Impact measures are "end" oriented. Some examples of impact measures might be the number of cities adopting and implementing standardized budgeting procedures or the relative dollar savings experienced by those communities implementing certain productivity programs.

The development of the evaluation criteria follows from the establishment of objectives and planned action. As noted earlier, objectives should be either directly measurable or should be structured in such a way that one can implicitly develop criteria which indicates achievement or progress toward achievement. For some objectives, notably the immediate objectives, it may be that only performance measures can be obtained. In other cases, say at the ultimate level of objectives, only impact measures may be appropriate.

In developing evaluation criteria, one must give careful attention to the data requirements associated with the individual measures. If data used in conjunction with performance or impact measures are not obtainable (or are too difficult or too expensive to get) such criteria can be of no practical use.

A criterion for judging the achievement of some desired objective is often dependent on having baseline data indicating a condition at some previous point in time. If these data are unavailable, the criterion is of questionable value. For example, a measure of the impact of a technical assistance project on energy conservation may be the reduction in the energy consumption of the communities involved in the project. If one has no estimate of the energy consumed for a comparable period before the project begins, then one has nothing to compare with at the end of the projects.

It is also important to emphasize that the development of good evaluation criteria is highly dependent upon the ingenuity and innovation of the staff persons working in the institution's public service programs. Developing useful and practical criteria, like writing meaningful objectives, will not just happen.

The Institutional Capability and Commitment Component

This evaluation component is concerned with assessing the institution's capability and commitment with reference to public service. The procedure associated with this component inventories and examines in an objective fashion eight characteristics of an institution's public service function.

If the purpose of the evaluation is to compare two or more universities in terms of their public service capabilities, these data could provide an objective basis for the comparison. Relative or arbitrary standards could also be used as norms for a particular characteristic against which an individual institution or public service unit could be measured. An example of a relative standard might be the increase in funding support for public service over a period of time. A thirty percent increase in funding for public service over a two-year span of time might be considered a significant positive indicator of university support for public service. Or, an arbitrary standard might be set for a given characteristic. For example, it might be established that, unless a public service unit had at least two full-time professionals working in public service, the unit would receive a below-standard rating for that characteristic.

The eight characteristics covered by the institutional capability and commitment component are as follows:

1. Organization
2. Administrative influence
3. Funding support
4. Staffing pattern
5. Facilities
6. Status and reward structure
7. Mission
8. Program of work.

These are not listed in order of priority since the priorities would have to be determined by the user of the evaluation process. Data should be readily obtainable for a given institution for each of these characteristics. Each of these eight factors is an indicator of the capability and commitment a given university has with regard to public service. Used collectively in the evaluation process, they should provide decision makers with a sound basis of facts on which to judge the institution's value or worth in terms of public service.

A set of questionnaires and interview instruments, along with the methodology for implementation, have been developed for obtaining the requisite data for this component.

The User Component

The user component seeks to obtain feedback from the recipients of university public service. Form the perspective of either an internal self-analysis or an external evaluation, it is important that the views and perceptions of the intended beneficiaries be included as part of the evaluation process. Data obtained from consumers of university public service can indicate not only whether the goals and objectives of the institution are in keeping with the needs and problems of the public they serve but also whether they are really being achieved. User responses are also useful in pointing out strengths and weaknesses of the various programs or projects of the university and can indicate substantive areas of service that need to be started, stopped, or modified.

Because the evaluation process places considerable emphasis on determining the impact of public service efforts, the user component takes on added significance. Input from this component can provide a better understanding of both the real and perceived needs and problems of clients of university public service units. In addition, client objectives and client expectations of universities can be ascertained. In turn, this information can, hopefully, be translated into more appropriate and adequate public service programs to be initiated by universities.

For several reasons, it is expected that the results of the user survey will be somewhat biased in favor of the university. There is a natural tendency on the part of most users to reflect favorably on university-provided services since these services are usually obtained at little or no cost and since there generally exists a cordial relationship between universities and state and local governments. Also, since university professional staff will be involved in identifying and contacting specific users for the interviews, they will likely select users with whom they have had successful programs. This suggests that considerable care should be exercised in selecting and interviewing user contacts and in interpreting the results obtained.

A questionnaire has also been developed for this evaluation component. It is intended to be administered during an interview with the user although, if necessary, it could be used as a mail-out. The interview procedure is preferred because important issues could be explored and implications could be probed.

Concluding Remarks

As indicated by the title, this paper describes a conceptual model for an evaluation process. The three components comprising the model, although developed, have not been implemented in a thorough fashion. The program component (for self-analysis) is currently being implemented on a limited basis in a service unit at the University of Georgia. The other two components will be pilot tested at the University of Tennessee in May 1977. As a result of these test efforts, the evaluation process will be further refined and improved.

Many educators and administrators feel that university public service programming will assume an even larger role in the university community due to declining enrollment and public demands for relevance. As public service assumes an expanded role, it will be important to develop mechanisms for evaluating efforts in this area. The concepts enunciated in this paper are intended to provide a basis for meeting this need.

The model described in this paper is designed for evaluating university outreach efforts to the public sector (i.e. state agencies and local governments). However, the concepts are clearly generalizable to a broader spectrum of university outreach programs including continuing education and extension programs in general.

WHY NOT "INDICATORS" FOR POSTSECONDARY EDUCATION?

Melvin D. Orwig
Dennis P. Jones
National Center for Higher Education Management Systems

Mounting expenditures for postsecondary education combined with increased demands on state governments for new and expanded social services have intensified pressures for postsecondary education accountability. Various agencies of state government collect a wide variety of data from postsecondary education. At the national level, agencies of the federal government likewise collect general statistical information about postsecondary education, in addition to the myriad of data required in order to administer specific programs. Professional associations, researchers, and others contribute further to the proliferation of data collection efforts.

Yet, despite the increased information flow and accountability demands, there remains dissatisfaction with the data used in the decision-making process in postsecondary education, and there is little evidence that the consequences of policy alternatives are more clearly understood. Similarly, as more data becomes available, the propensity of government officials to focus on institutional operations increases in a manner that can further erode effective institutional management. Thus, at the same time that ever increasing quantities of data are being collected, processed, and stored, those persons who make decisions at state and national levels continuously decry a lack of relevant information on which to base their decisions about postsecondary education and with which to evaluate the relative effectiveness of the support that is provided to postsecondary education.

This paradox of deprivation amidst abundance is explanable in many ways. In some cases, the problem is availability of the necessary data—those data most needed for certain decisions may not be among those that are collected, or, if collected, may be so out of date or so inaccessible as to be useless. In other cases, the problem may be one of data accuracy—while available, the data may be of such questionable accuracy that the decision makers refrain from using them. Perhaps the major problem, however, is one of sheer volume. Insufficient effort has been directed towards selecting and summarizing data about postsecondary education into a form that is useful to individuals other than researchers or other experts in the field of postsecondary education. Frequently, the available data are not grasped and understood by the users and, as a consequence, discreet and disaggregate data are as likely to divert attention from broad policy issues as they are to enhance the level of discussion and debate over policy alternatives.

The problem is not insurmountable, however. Ways have been found to describe complex phenomena and organizations in terms of constructs that have meaning to state and national legislators and other decision makers. Through the development of *indicators* of major components of the economy, for example, it is possible to assess and describe the nation's economic situation. Thus, the gross national product, the unemployment rate, price indices, the manufacturing index, and a variety of other economic indicators enable decision makers to understand the economy and to evaluate, through these indicators, the possible consequences on the economy of different policy alternatives. Similarly, water and air quality indices provide clues about the changing conditions in the environment, and summary data about mortality, morbidity, infant mortality, and life expectancies make it possible to monitor the nation's health. Postsecondary education, however, does not have a set of commonly accepted indicators, and policy deliberations are correspondingly limited. As Gooler (1975) has pointed out:

> What is education? Consider the myriad of ways in which education is described: the number of persons graduating from high school; senior citizens engaged in learning activities; . . .inequalities in school finance; Ph.D's driving cabs; American Nobel Prize winners. Bits and pieces of the story of education abound. How can we make sense of this incredible array of information? How can we know where we are in education and from where we've come?

Postsecondary Educational Indicators

While the need for development of indicators is not unique to postsecondary education, the need for postsecondary educational indicators is substantial. There has always been a general interest in knowing where we are and where we've been. In response to an expressed need to understand changes that are occurring in our society and in postsecondary education and the impacts of those changes on people's lives, the idea of indicators has emerged. While the concept of indicators is not new, the notion that indicators can be used to describe and monitor noneconomic or social phenomena, and that they can be applied to the public sector in general, is relatively new. Social indicators, according to Bauer (1966) are "statistics, statistical series, and all other forms of evidence that enable us to assess where we stand and are going with respect to our values and our goals, and to evaluate specific programs and determine their impact" (p. 1). The role of social indicators, he claims further "[is] not only to report where we are and where we have been, but to provide a basis for anticipation of future states for a continuing reassessment of the relative probability of the various conditions that have been taken into account in planning" (p. 19). From this definition, several desirable characteristics of indicators can be identified:

1. Indicators should focus on major aspects of the subjects that are important to policymakers.

2. Indicators have to be sufficiently adaptable to accommodate various underlying dimensions that are considered in policy development. While at one time it was sufficient to know the proportion of the labor force out of work, more recently affirmative action concerns and programs designed to address specific segments of the population that are more seriously affected have necessitated the development of more disaggregate indicators.

3. Indicators frequently take the form of a simple number that is arrived at through the use of (sometimes elaborate) procedures that have been applied to large quantities of basic data. Indicators attempt to simplify and improve the communication of information about important concepts.

4. Objectives or goals can frequently be stated in terms of quantitative dimensions of the indicators, thereby enhancing their policy relevance and utility in policy deliberations. Thus, for example, economic policy is designed to reduce unemployment to five percent while limiting inflation to three percent per year.

5. Acceptance and use of indicators in relation to broad social goals is another important characteristic of indicators. As indicated in previous paragraphs, major proposals for economic policy in the country are frequently presented and evaluated in terms of their reported effect on key indicators.

6. Indicators tend to take on importance and utility through continued use that allows for observations of trends. The ability to monitor change and to recognize the difference and magnitude of change over time becomes an important and necessary component of effective indicators.

What Has Been Done

Considerable attention has been paid to the concept of social indicators during the past two decades. Wilcox, Brooks, Beal & Klonglan (1972), for example, have compiled a bibliography in excess of one thousand entries related to social indicators and societal monitoring. In this bibliography, indicators are analyzed and described across the entire spectrum of human social experience, health, transportation, crime, welfare, religion, education, and others.

In reviewing the literature with particular focus on postsecondary education, one is struck by the considerable amount of data currently being collected about postsecondary education. To be sure, the current data collection efforts do not address all aspects of education; there are major gaps in the kinds of data being collected. Most striking, however, is the fact that most of the education data currently being collected cannot in its present form be linked to decisions. It is this inability to relate educational data to decisions that is not only the most critical shortcoming but also the one which is receiving the least attention.

While the development of indicators about education has not received the attention it deserves, work in this area is not totally lacking. At the national level, the U.S. Bureau of the Census collects data that can be used to provide macro-indicators about postsecondary education. These data, for example, yield indicators of overall level of educational attainment of the population, the rates of participation in certain educational activities, and participation by sex and racial categories. It is significant, however, that census data are not compatible with the Office for Civil Rights (OCR) categories required for use by institutions to establish targets in their affirmative action programs, even though census data is referred to by OCR as the logical source for obtaining data to establish affirmative action targets.

Another important activity now underway is the annual report published by the National Center for Educational Statistics (NCES). (See the Condition of Education, 1975, 1976). In these reports, NCES attempts to describe the status of education along such dimensions as participation, outcomes of schooling, relationships between education and work, and the characteristics of educational personnel. Similarly, the attempts by Lupton, Augenblick, and Heyison (1976) in *Change* to report on the financial status of higher education represent yet another major national effort to develop postsecondary education indicators. Other efforts include those of Halstead (1974) and Wynn (1974, 1975) to develop indicators of the prices of goods and services used by institutions of higher education.

The work associated with the development and conduct of the National Assessment of Educational Progress (NAEP) also represents a form of educational indicator. In the 1960's, NAEP was created to gather information about educational achievement for national policymaking. Test results are analyzed according to respondent's age group, region of the country, sex, race, parent's education, and the size and type of community. Through a continuing cycle of tests and reported results, the NAEP was designed to provide a public record of the nation's educational status.

The work of Astin also provides a longitudinal set of indicator data about the kinds of students enrolling in institutions of higher education. In this ongoing study, data have been collected about entering freshmen in approximately 500 institutions throughout the country. This survey contains a variety of demographic items as well as items regarding educational and vocational plans, health ratings, achievements, skills, values, interests, and other descriptors of students and their plans. Through this effort, it has become increasingly possible to monitor students enrolling in postsecondary education and to observe changes in their expectations and aspirations relative to postsecondary education.

At the state level, the National Education Association (NEA) annually publishes *Ranking of the States*, which examines the states in terms of population and enrollment, attainment, expenditures, and other characteristics of elementary and secondary education. (See NEA, 1973.) At the National Center for Higher Education Management Systems (NCHEMS), McCoy (1976a, 1976b) and Weldon (1976a, 1976b) have explored the potential uses of existing data (i.e., data that has already been collected by some national agency) to describe the sources of financial support to postsecondary education. These reports have been done using 1972–73 and 1973–74 data, and they examine the measures that can be used with existing data to assess various aspects of postsecondary education from a state-level perspective.

Other state-level work includes the annual ranking of the states that is published in the *Chronicle of Higher Education* and focuses on the rankings of the states on selected aspects of postsecondary education and, in Glenny and Kidder (1974) and Glenny and Ruyle (1975), the examination of state tax support of higher education from 1963–1975. Halstead (1974), as well, devotes a chapter of his book to the development of indices and comparisons among the states.

Work on more micro forms of indicators—those that examine aspects of an individual institution—are also underway.[1] Aspects of the Special Report by *Change* (Lupton, Augenblick, & Heyison, 1976) are directed to this end. And, in the context of a separate project at NCHEMS in 1973, Carroll and Collier explored ways in which indicators could be developed to assess the financial conditions of postsecondary education institutions. These papers were subsequently reviewed by a national task force in September of 1973 and several directions and suggestions were made regarding future efforts that NCHEMS might constructively pursue. Van Alstyne and Coldren (1976) report on efforts in an ACE project to develop measures of the financial conditions of colleges and universities, and two earlier studies by Bowen and Minter (1975) and Lanier and Anderson (1975) also use indicators to examine the financial conditions of higher education institutions. Jenny (1975) has also done extensive research on the development of indicators that can be used to assess financial health.

Another interesting development is the service recently announced by the Laboratory for Data Analysis (1977), a non-profit corporation located in Princeton, New Jersey. Through their Financial-Guidepost Service, they will use Higher Education General Information Survey (HEGIS) and census data to provide reports to institutions on selected aspects of institutional operations. The reports will contain trend analysis and will show how the institution compares to similar institutions on the characteristics that are examined each quarter.

In contrast to such ongoing or recently initiated efforts, there are many educational data-gathering efforts that are not designed to be long-term monitoring activities, but rather to be brief studies conducted to meet a specific information need. While special, one-time research projects generally cannot provide the kind of data base needed for educational indicators, they can have a significant impact on our understanding of what it is we are trying to measure. The work of the National Commission on the Financing of Postsecondary Education (1973) for example, represented a major effort designed to articulate a set of goals and to relate data to the goals of postsecondary education. The finance commission's articulation of goals and the subsequent matching of data to these goals represented an important attempt to relate postsecondary education information to the needs of policymakers.

In addition to these major research efforts, each year dozens of other special studies are conducted by institutions, agencies, and individuals on topics or variables important to our understanding of educational processes and outcomes. Unfortunately, however, potential users of these data may find it difficult either to find a study or gain access to the data contained in it. Additionally, each of these efforts looks at the educational system from its own particular perspective, using its own data collection instruments, data elements, and definitions. Thus, attempts to integrate the various studies to obtain a more comprehensive overview of education becomes an almost insurmountable task and one which no one has yet been able to accomplish.

Far too often, problems in using data are not related as much to access as they are to the fact that the primary emphasis is placed on the collection of data rather than on insuring that information can be derived from the data that are collected. There has still been far too little effort directed towards determining how this data might be more effectively focused on the specific areas of concern to educational decision makers.

Agenda For The Future

Given all the activities described, why, it might be asked, should we be concerned about the development of postsecondary education indicators? Is there not enough going on?

The answer, as you might surmise, is no. While the need for postsecondary education indicators and an interest in their development has clearly accelerated, there remain critical components and aspects that are not being addressed in present activities. We lack an overall framework for indicators, and, as a consequence, the specific work that is carried out experiences little cross-fertilization and moves us away from, rather than towards, consensus. While we understand the need for indicators very well, we do not understand their roles and uses well at all. Nor have we obtained much experience, across individual projects, about the advantages and disadvantages of different forms of indicators.

Progress in the development of indicators, therefore, will require the development of a framework that enables us to understand better who the users of indicators are and how indicators might be used in decision making. It will require research on the form of indicators and how the form should vary as a function of use and users. It will require a carefully structured consensus-building process so that the parties to postsecondary decision making will have confidence in what is being communicated by the indicators. And, finally, procedures for the use of indicators in the planning and decision-making process of postsecondary education will need to be developed.

It might be argued that different indicators are required to facilitate the planning and decision-making process at each of these levels. Unlike the economy, where national policy tends to dominate state policy, policy for postsecondary education, and to an increasing degree, for private postsecondary education, is derivative of state government. Very much like economic policy, however, the providers of products and services—postsecondary institutions—are affected by the actions and policies of the federal and state governments. A conceptual framework that enables us to understand better the need for and uses of indicators among the various postsecondary decision makers is an important necessary first step to achieve progress in the development of indicators.

Research necessary to achieve such progress would focus on the various forms that indicators might take and the availability of data to support those indicators that are needed. This is a large and important task. It is conceivable that much of the information needed to support the development of postsecondary education indicators can be provided by the U.S. Bureau of Labor Statistics, U.S. Bureau of Census, and other data collection agencies. But it is also true that NCES, the major collector of education data, will have an important role to play. And based on the experience of NCHEMS and other users of HEGIS data, there are serious problems with the reliability, validity, and availability of current NCES postsecondary education data collection activities (see McCoy, 1976a, and Jones, Katchian, McCoy, and Orwig, 1977). Continued research is necessary, therefore, to determine the extent to which present data collection efforts will support the development of indicators and to identify needed modifications in present data collection procedures.

The need for consensus cannot be overestimated. At the same time, however, neither can it be achieved overnight. Consensus cannot be arrived at by a national conference, an NCHEMS or ACE Task Force, an article in *Change* magazine, or any other single activity. On the other hand, it probably cannot be achieved without them. The road to consensus will be a difficult one with false starts, mistaken judgments, frustrated research, inadequate data, and philosophical differences. Yet, to ignore the need for consensus about the form and utility of the indicators is to deny their eventual use. Consensus represents a kind of confidence, and it is confidence in the need, form, and utility of indicators that will lead to their implementation. The task of developing indicators is one in which we all have a role. Certainly, we all have a stake.

Footnote

[1] Using the economic analogy that has been pursued in other parts of the paper, micro indicators for postsecondary education might be likened to the financial ratio analysis that is employed by Standard and Poors and others to analyze stock offerings.

References

Bauer, R. *Social indicators.* Cambridge, MA: The M.I.T Press, 1976.

Bowen, H.R. and Minter, W.J. *Private higher education, first annual report on financial and educational trends in the private sector of American higher education.* Washington, D.C.: Association of American Colleges, 1975.

Carroll, M. *An adaptation of financial analysis to higher education* (Internal staff paper). Boulder, CO: National Center for Higher Education Management Systems, 1973.

Collier, D.J. *The determination of institutional financial distress: A proposal designed for the needs of decision makers* (Internal staff paper). Boulder, CO: National Center for Higher Education Management Systems, 1973.

Glenny, L. and Kidder, J. *State tax support of higher education: Revenue appropriations trends and patterns, 1963–73* (Report No. 47). Denver, CO: Education Commission of the States, 1974.

Glenny, L. and Ruyle, J. *State tax support of higher education: Revenue appropriations trends and patterns, 1963–75.* Berkeley, CA: Center for Research and Development in Higher Education, 1975.

Gooler, D. *Development and use of educational indicators.* A paper presented at the Annual Invitational Conference by the Educational Testing Service, New York, NY, 1975.

Halstead, K.D. *Statewide planning in higher education.* Washington, D.C.: U.S. Government Printing Office, 1974.

Halstead, K.D. *Higher education prices and indexes* (U.S. Department of Health, Education and Welfare publication No. OE75-17005). Washington, D.C.: U.S. Government Printing Office, 1975.

Jenny, H.H. Higher education finance: Health and distress. In *Formulating policy in postsecondary education: The search for alternatives.* J.F. Hughes & O. Mills (Eds.) Washington, D.C.: American Council on Education, 1975.

Jones, D.P., Katchian, A., McCoy, M., and Orwig, M.D. *State-level information base: Field review edition* (Technical Report No. 85). Boulder, CO: National Center for Higher Education Management Systems, 1977.

Katz, A. and Miller, H. *Indicators of the state of institutions of higher education* (research note). Trenton, N.J.: Department of Higher Education, 1976.

Laboratory for Data Analysis. *On measuring financial strengths of colleges and universities.* Princeton, N.J.: Author, 1977.

Lanier, L.H. and Anderson, C.J. *A study of the financial condition of colleges and universities.* Washington, D.C.: American Council on Education, 1975.

Lupton, A.H., Augenblick, J., and Heyison, J. The financial state of higher education. *Change,* September 1976, pp. 21–38.

McCoy, M. and Jones, D. *Federal level needs assessment for postsecondary education* (Internal staff paper). Boulder, CO: National Center for Higher Education Management Systems, 1977.

McCoy, M. *State and local financial support of higher education: A framework for interstate comparisons—1972–73: Field review edition.* Boulder, CO: National Center for Higher Education Management Systems, 1976.(a)

McCoy, M. *State and local financial support of higher education: A framework for interstate comparisons—1973–74: Field review edition.* Boulder, CO: National Center for Higher Education Management Systems, 1976.(b)

National Center For Educational Statistics. *The condition of education.* Washington, D.C.: U.S. Government Printing Office, 1975.

National Center for Educational Statistics. *The condition of education.* Washington, D.C.: U.S. Government Printing Office, 1976.

National Commission on the Financing of Postsecondary Education. *Financing postsecondary education in the United States.* Washington, D.C.: U.S. Government Printing Office, 1973.

National Education Association, Research Division. *Ranking of the states, 1973.* Washington, D.C.: U.S. Government Printing Office, 1973.

Van Alystyne, C. and Coldren, S.L. *The financial measures project.* Washington, D.C.: American Council on Education, 1976.

Weldon, K. *Sources of financial support for higher education institutions—1972–73.* Boulder, CO: National Center for Higher Education Management Systems, 1976. (a)

Weldon, K. *Sources of financial support for higher education institutions—1973–74.* Boulder, CO: National Center for Higher Education Management Systems, 1976. (b)

Wilcox, L.D., Brooks, R.M., Beal, G.M., & Klonglan, G.E. *Social indicators and societal monitoring: An annotated bibliography.* San Francisco: Jossey-Bass, Inc., 1972.

Wynn, G.R. *Inflation indicators in liberal arts colleges.* (Dissertation, 1974) University Microfilms No. 75-1399, P.O. Box 1307, Ann Arbor, Michigan.

Wynn, G.R. *Inflation in the higher education industry* (Professional file, 6(1). Washington, D.C.: National Association of College and University Business Officers, 1975.

SIMULATION MODELS FOR PLANNING IN EUROPEAN HIGHER EDUCATION

K. M. Hussain
New Mexico State University

Simulation was used for planning in North America in the middle 1960s with CAMPUS (Comprehensive Analytical Methods of Planning in University Systems) and RRPM (Resource Requirements Prediction Model). This was followed by numerous other models, including CAP:SC/SEARCH and HELP/PLANTRAN. In Europe, the use of simulation came in the early 1970s with models currently being developed and implemented. These developments in Europe were largely independent of those across the Atlantic and even independent of each other. To one important extent, they represent considerable conceptual innovation. Also, some of their submodels have relevance to North America and are portable. As such, they should be of interest to the researcher and modeler in North America. Identifying the relevance, portability, and conceptual contributions of the European models is the objective of this paper. These models are described in terms of their development, their basic logic and scope, their planning-related modules, and some implementation features.

The discussion is mostly a comparative one addressing the American audience and emphasizing the differences with American models, especially the most comprehensive CAMPUS and the most commonly used RRPM.

European Simulation Models

Implementation of simulation models in Europe was preceded by considerable theoretical work. This included work by Bernard (1967), Bessai, Elstermann, Lutz, and Redelberger (1969), Caspar, Bayer, Bingest, and Blahusch (1968), Dietze (1969), Finkinstaedt and Redelberger (1970), Griese (1970), Menges and Elstermann (1970) and the OECD (1970). But none of this work resulted in implementation. When asked for reasons, one of these authors replied, "because we in Europe do not have the data base required by such models; and further, 95% of our budget spending is determined by the government. The remaining 5% represents nongovernmental decisions. Why do we need a model?"

This was true in 1971 and is still largely true in many European countries. But of state-funded universities, some are new and less constrained while others are very old and have a tradition of fiscal autonomy. Both types have developed and are using simulation models for long-range planning. Some of these models are restricted in their use to only one institution. They include the models developed at Bilbao, Spain, and at a university of Scotland. Others have been extensively used within one university (e.g., the TUSS and MSAR model) or have been used in more than one institution and country (e.g., the HIS or GERN models).

HIS Model

The HIS model is named after the organization that developed it—Hochschul-Information System in Hanover, West Germany. HIS was financed in its first 4½ years by the Volkswagen Foundation and is now supported by the Länder (states) and the federal government of West Germany.

The HIS model is currently being used operationally (Hussain and Freytag, 1973) by the University at Karlsruhe but has also been run at some other universities in West Germany and in Austria.

The basic logic of HIS is shown in Figure 1. It is very similar to that of CAMPUS and RRPM in the United States, and even the other European models TUSS and MSAR. Like other European models, HIS added on the cost components (boxes 11–14). These are not an integral nor a very significant part of their models since the Europeans are not as concerned with costing or unit costing as are the Americans.

The HIS model, like CAMPUS, is at the dissaggregated level of the activity (such as a lecture, lab section, or seminar). HIS, like the other European models, does not have the detailed richness of planning variables (such as substitution of faculty or space, hiring and sabbatical policies, and administrative loading) which CAMPUS does. Nor does it have the modules of faculty flow, budget review, or revenue. But HIS does have two submodels that are unique to both Europe and the U.S. These are the optimal assignment of faculty and the capacity module.

The Capacity Module

All the planning models discussed in this paper are concerned with the resources required for a given student enrollment. The HIS model, in addition, is concerned with the reverse question: given a resource capacity constraint (faculty by rank within each discipline and space capabilities), what is the maximum student enrollment in each instructional program that the constrained capacity can support?

This question is of great relevance to Germany which has an upper limit on student enrollment (numerus clauses) in a number of disciplines. In these academic programs, the capacity module determines a ceiling enrollment. This ceiling could possibly be increased by changing planning variables in the resource generator and even the ICLM (Induced Course Load Matrix). Finding such a solution is one of the ways the resource generator is used.

The flow of the capacity module is shown in Figure 2. It reproduces the start and end of the resource generator (boxes 1 and 3 in Figure 1). The capacity module starts with the calculation of faculty full-time equivalency (FTE) required by each rank within each academic department. The module then determines the utilization of faculty and of space calculated by a specific algorithm (box 15, Figure 2). This utilization then is compared with desired utilization levels as stated by policy parameters (box 16). If the comparison (box 17) shows that the utilization is less than the desired utilization, the YES exit of box 17 leads to box 18, where the student enrollment is increased. The model recalculates the new utilization (box 15) until the utilization is equal to or greater than the desired level. Then the NO exit of box 17 leads to printing the new value of enrollment (box 19).

The final solution is important not only for institutional planning but for national planning since the enrollment ceilings are input to a national student assignment model. This model assigns students to specific universities, allowing for variables such as student preference, state of birth, time of application,

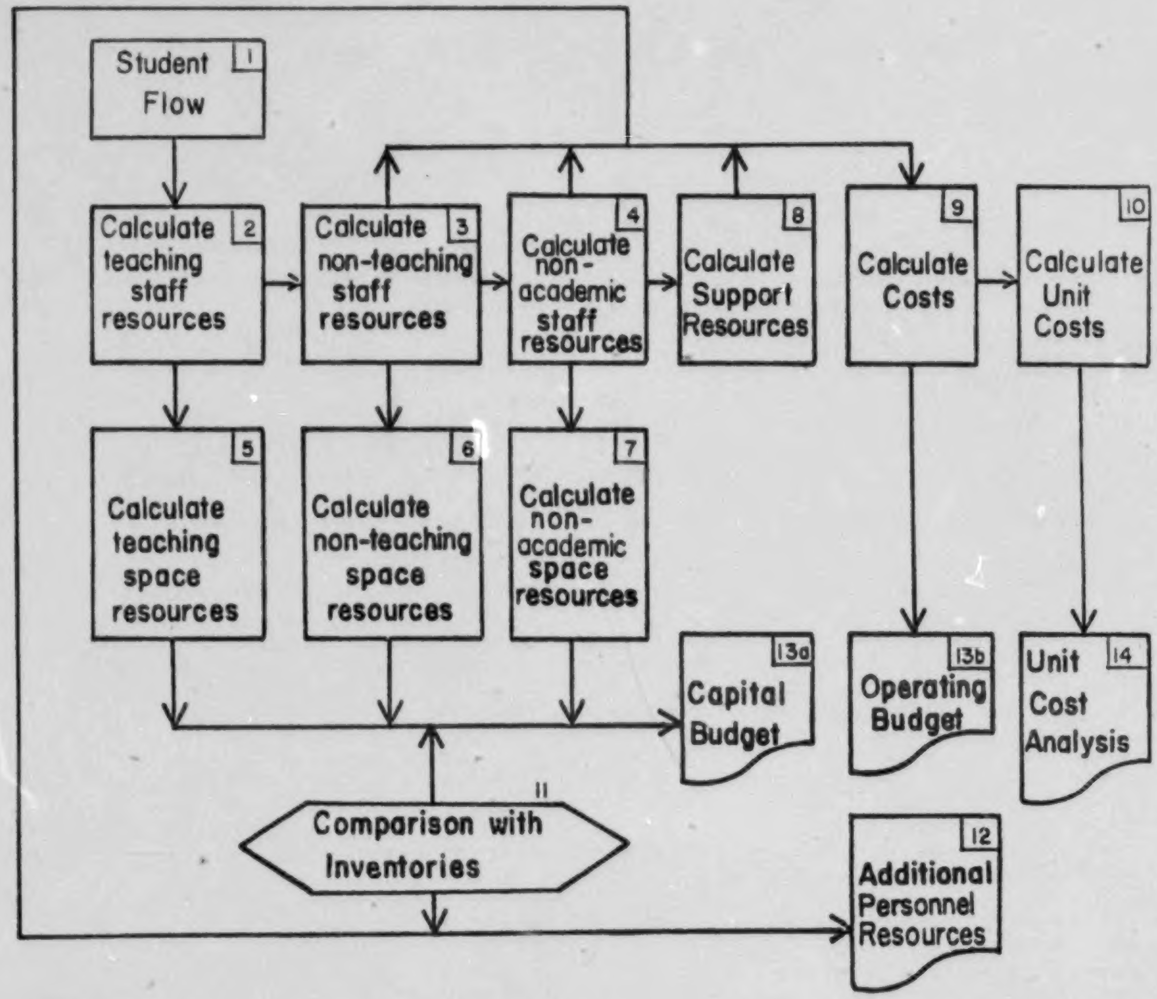

Student Flow 1
Calculate teaching staff resources 2
Calculate non-teaching staff resources 3
Calculate non-academic staff resources 4
Calculate Support Resources 8
Calculate Costs 9
Calculate Unit Costs 10
Calculate teaching space resources 5
Calculate non-teaching space resources 6
Calculate non-academic space resources 7
Capital Budget 13a
Operating Budget 13b
Unit Cost Analysis 14
Comparison with Inventories 11
Additional Personnel Resources 12

Figure 1. Basic logic for resource allocation models.

and academic achievement in addition to quotas for the handicapped, foreigners, and army applicants (Böckling, 1973).

The capacity module is of less interest at the moment to universities in North America because they do not have the same problem of undercapacity that exists in Western Germany and other countries in Europe. But even in North America, the module may have application in certain sectors, such as medical schools, where capacity is constrained. In any event, the HIS model should be of interest to model builders because the algorithm reduces the number of iterations needed for a solution.

Optimal Faculty Assignment Module

The Optimal Faculty Assignment Module, described in Dettweiler and Frey (1972), is unique to the HIS model (version A). It requires as input the identification of each activity that each faculty member can teach and the maximum contact-hour teaching load of each faculty. It then optimally assigns faculty to each activity for the contact hours that need to be taught as determined by the contact-hour generator of the resource prediction model, subject to the maximum teaching load for each faculty member. The module then identifies the shortages or surpluses of faculty resources for each activity.

The association of required faculty to activity is not made in the other models where the faculty needs are calculated for the entire administrative unit of instruction, such as an instructional department. These models assume the substitutability of faculty within the department. This assumption may be valid if the shortages or surpluses of faculty are in related teaching areas. But the aggregated faculty calculation is not conducive to specific control of faculty hiring. It is theoretically possible for a department to hire new faculty in an area which is overstaffed, using funds meant to hire faculty in an area where there is a shortage. As a result, the next year the latter department might still be short of faculty in one specialty even without an increase in student load. The HIS model avoids this possibility, for faculty shortages are specifically identified by kinds of activities that need to be taught, and hiring must be done for those activities. The model, therefore, serves as a control in the hiring of new faculty.

The optimal faculty assignment module can be used independently of the institutional resource model at the departmental level. The effect of changing planning variables (such as faculty loads and faculty teaching capability configurations, including those of prospective new faculty) can be simulated.

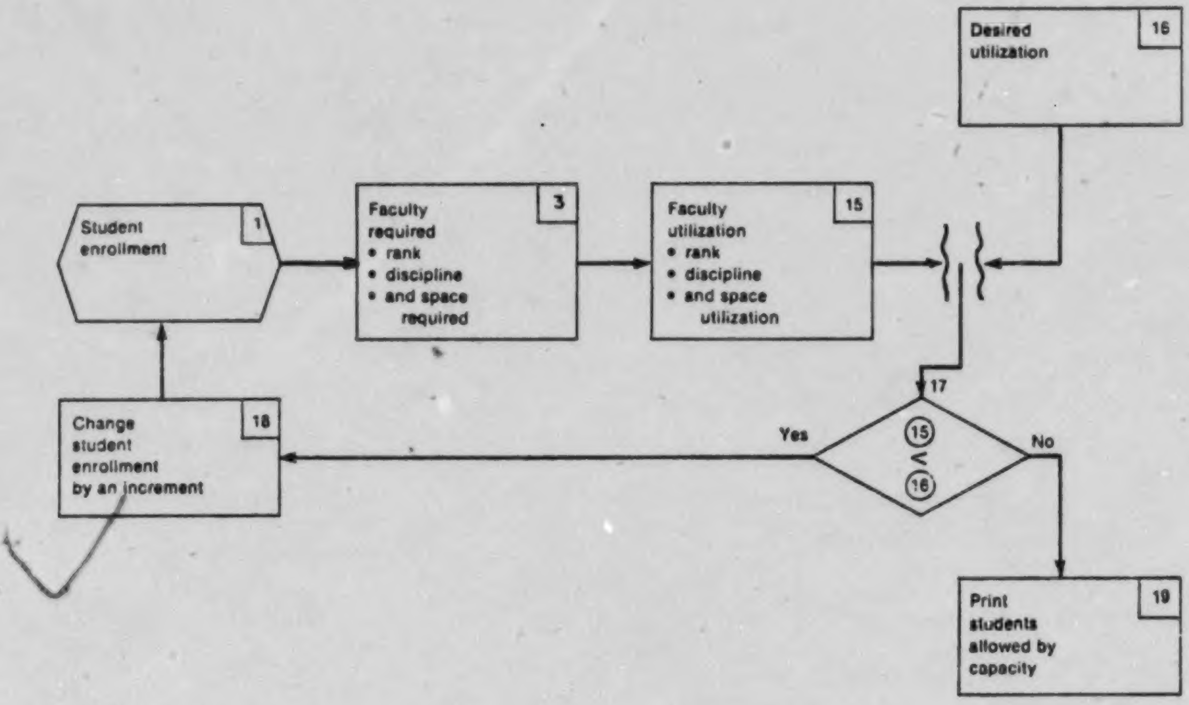


Figure 2. Capacity module.

Also, the module can account for faculty preferences for course assignments in which case the shortages would reflect needs that emerge when faculty teach what they prefer to teach rather than what they are capable of teaching. The module is, therefore, useful for planning at the departmental level in addition to the institutional level.

TUSS Model

TUSS stands for Total University Simulation System. It is essentially a resource prediction model designed for the use of the University of Utrecht, the Netherlands. Its first version, TUSS-1, was implemented in 1970. TUSS-3 is the current version and is at the more disaggregated level (activity level). It is this version that is also being implemented at the University of Geneva in Switzerland.

Like all other models previously mentioned, TUSS is student driven. But instead of one student flow model (box 1 in Figure 1) the user has a choice of one from three: the first uses the Markovian chain, the second is a multiple regression model, and the third is an ad hoc model.

Given student enrollment in each activity, the model calculates the faculty required. However, like most models, it does not use the ICLM. Instead, it starts with the hours spent by each student (in each field of study) in each curriculum year. These are policy or endogenous variables. These are distributed into scheduled hours and unscheduled hours by ratios which are also policy variables. The scheduled hours are lectures where class size is insignificant; seminars or recitations where class sizes are significant; and finally, laboratories where class size and equipment is significant. The unscheduled hours are hours spent by the student on individual work such as reading, writing, internship, and examinations. The calculated time spent in each type of instructional activity by students is then multiplied by the ratio of faculty contact hours to student hours for each instructional type. This is divided by class size (where class size is significant) and faculty load (which gives the number of faculty required). Thereafter, the calculations are conventional as shown in Figure 1 (box 2 onwards).

The space calculations in TUSS (boxes 5–7) are conceptually like those in CAMPUS and RRPM except that they are more comprehensive. They include related resources of equipment and are more extensive in scope. Most important is the inclusion of library space which is a function of all users of the library, teaching staff, nonteaching staff and students.

The total space requirements are calculated according to urban areas. This is unique to TUSS because of the nature of the location of the University of Utrecht. It will eventually be housed in a large modern campus now being built on the outskirts of the town of Utrecht. Meanwhile, many of the classes are located in buildings in downtown Utrecht as are some of the offices, including the Office of Planning that has developed and maintains the TUSS model. Therefore, space (and equipment) calculations are done for each urban area and for each planning period according to specifications stated as a set of policy variables. These specifications identify the department that should be housed in each urban area. Ideally, this reduces the walking distance and travelling time for personnel getting to work.

The space requirements are compared with space inventories (box 11 in Figure 1) in the university data base. This is done manually for most models including RRPM and some versions of CAMPUS.

Space is a constraint in determining the admission ceilings for *numerus clausus* as incorporated in the HIS model for West Germany. But in the Netherlands, in addition to the space constraints, teaching staff availability is used to determine the *numerus clausus* ceilings. The available teaching staff is determined exogenously, and after the simulation of resource requirements is made by TUSS, this staff is distributed over the disciplines. This distribution then determines the staffing constraints for admissions by each discipline.

A final important feature in TUSS is its emphasis on training users of the model. To achieve this, a training model of TUSS called USG: University Simulation Game, has been designed (Hussain, 1977). This game has been used to train (and involve) not only administrative users of the model but also students, because they take a very active role in university administration in the Netherlands.

MSAR Model

MSAR (Model of Simulation and Allocation of Resources) was designed and implemented in 1974 as a response to a decision in 1973 of the government of Portugal to locate the Universidade Nova de Lisboa in the outskirts of Lisbon, with an enrollment starting at 800 in 1976 and growing to 10,000 in 1985. The government wanted this university to experiment with different curriculum and techniques of instruction. In planning of such a university, the rector asked many "what-if" questions. To answer such questions, MSAR was created.

MSAR essentially is a set of two submodels as implied by the conjunction in the title. One submodel was for space planning that would simulate different mixes of space types given different planning factors such as space used for student or staff, construction cost coefficients, multiple use of space, etc. Another submodel was to simulate different mixes of personnel given different planning factors such as faculty loading, staff loading, teaching techniques, class sizes, instruction types, etc.

Conceptually, the two submodels follow the basic calculations of CAMPUS, HIS, RRPM, and TUSS which were studied carefully before designing MSAR. The main variation was the adaptation of the faculty calculation to the unique conditions in Portugal: overtime is allowed for certain ranks and only certain ranks can teach labs and seminars.

Another variation concerns the estimation equations on personnel. MSAR calculates personnel requirements not only for maintenance personnel but also for specialized types of instructional personnel such as lab assistants. Making lab assistants a function discipline, number of students, contact and type of instruction, is elegant, but it raises questions about the feasibility, validity, and benefit-cost ratio of using such disaggregated estimation equations. This decision on disaggregate equations was made in spite of the experience of implementors of RRPM 1.3 which showed that the user preferred aggregated estimation equations to the detailed ones that used elaborate statistical packages for determining the necessary coefficients. It would be interesting, therefore, to follow the experience of MSAR in this respect.

MSAR was designed and implemented in one year, a relatively short time for such a comprehensive planning model. There are at least two explanations for this. One is that MSAR had top management support. The rector had a planning background and had come directly from the National Planning Office for Education. Furthermore, he brought with him part of his planning staff who were both knowledgeable and experienced in modeling. The staff was also knowledgeable about data processing and ensured that all the data needed for MSAR was included in the institutional data dictionary. This was to ensure availability of historical data later to be used for model coefficients. For the first few runs, coefficients were either normative or based on the experience of users of CAMPUS, HIS, RRPM, and TUSS.

Another reason for MSAR's relatively quick success was that its designers adapted the basic concepts of HIS, CAMPUS, RRPM, and TUSS and then concentrated on its extensions and implementation. Their success would have been greater had it not been for the political revolution in Portugal resulting in a change of top management at the university and the freezing of funds for university buildings.

GERN Model

GERN is an acronym for Generation of Resource Norms. It is still so new that its name has not yet been agreed upon by its designers. It has been implemented at the Université Catholique de Louvain, Belgium. It is currently being implemented at the Université de Liege, also in Belgium.

Although the logic of GERN will not be described here, the main differences with other resources models will be briefly mentioned.

GERN is essentially a resource prediction model, but the resource coefficients (called *K* coefficients) are norms (i.e., standards and prescribed values). They are normalized relative values (i.e., $0 \leq K \leq 1$). They are determined by the planning committee that comprises representatives from each faculté (the approximate equivalent in the U.S. would be a college or professional school).

GERN predicts on the faculté level. The resources calculated are what should be spent, and these are then compared with what is desired or predicted. Deviations are analyzed, adjustments made, and budget allocations then determined.

The desired or predicted resources can be generated by GERN using a desired or historical set of coefficients and variables. Alternatively, it can be generated by using RRPM. The RRPM model has been implemented using essentially the same data base as used by GERN as part of a postgraduate dissertation. Another dissertation is concerned with the adaptation and extension of both GERN and RRPM for use at the Université de Liege.

Summary and Conclusions

The models of resource allocation in Europe and the United States have many common characteristics: they are cost models, not cost-benefit models; they are simulation models, not optimizing models; they have mostly linear equations for calculating their nonsalary costs and, thus, ignore discontinuities; they do not predict the number of new entrants to the institution nor do they relate it to manpower requirements; and, finally, all are deterministic models (except for the probability matrix used in the student flow module).

In scope and comprehensiveness, the models in Europe are comparable to those in the United States, though they do not have the richness of control variables nor do they have some of the submodels of CAMPUS, such as the faculty flow model. The European models are also cost and costing models, but in all cases these components were added as a separate module later. One reason is that the Europeans are not as concerned with accountability as are the Americans. Also, the Europeans have less resources for model development. This is especially true in the case of GERN, MSAR, and TUSS which have been developed entirely on institutional resources. HIS, on the other hand, like CAMPUS, did much of its original development on foundation grants and is now supported by federal funds (like NCHEMS). The shortage of development resources is not helped by the lack of contacts between the model developers. This is especially true of the developers of the HIS and TUSS models who did not know of each other's development even though they were separated by only a six-hour drive by train. This resulted in some "reinventing of the wheel" which could have been avoided. It was avoided by the MSAR developers who adopted much of the basic concept of the then-existing models and concentrated on its adaptation to the local environment.

The parallel and independent development of HIS and

TUSS were costly, but they contributed refreshing new approach to student load (TUSS) and submodels (HIS), like the capacity model and the room-assignment model.

The European models have many limitations, but these are the same as experienced in America. The systems provide no help in studying and improving the stability of parameters, especially the ICLM. Also, no help is provided to the user in searching through the very large set of permutations of possible alternative strategies (both before and after the model is run). Search routines for identifying promising and near-optimal strategies would greatly help the user. Even the current output would help the user if it were packaged with graphics that show trends and gradients rather than masses of numbers on sheets of paper. Reports could be designed that also help management by exception in identifying information and variations that exceed allowable levels. Finally, the models do not enable the user to calculate trade-offs directly.

These items are technological and technical problems and can hopefully be overcome, given more time and effort. What is more important is the conceptual limitation for which there is less hope: problems of benefit identification and measurement as well as equitable and economically rational cost allocation rules. Finally, there is the problem with the user—of knowing the model; of knowing how to use it and how not to use it; and finally, of appreciating its capabilities and its limitations. There is need for work in all these areas if allocation models are to be used effectively both in Europe and the U.S.

References

Bernard J. General optimization model for the economy and education. In *Mathematical Models in Educational Planning*. Paris: Organization for Economic and Cultural Development, 1967, pp. 207–244.

Bessai, B., Elstermann, G., Lutz, H., and Redelberger, M. *Modellstudie zur personalplanung an der Universität des Saarlandes bis zum jahre 1975*. Saarbrucken: Universität des Saarlandes, 1969.

Böckling, J. *Nicht nur verwaltung des mangels*. Aufsatze: DUZ/HD, 1973.

Casper, R., Bayer, W., Bingest, A., and Blahusch, F. *Ein modell zur Ermittlung der Zutassungszahlen von Studienfängerm an einer wissenschaftlichen Hochschule*. Stuttgart, Germany: Universität Stuttgart, 1968.

Dettweiler, E. and Frey, H.W. *Simulationmodelle für die Hochschulplanung* (HIS-Brief-19). Hannover, W. Germany: Hochschul Information System, 1972.

Dietze, H.D. *Studie zur Kapazitätsermittlung an Universitäten Saarbrucken*, W. Germany: Universität des Saarlandes, 1969.

Finkenstaedt, T. and Redelberger, M.A. *Ausbildungskapazität-Lehrkörper*. Forshung-Lehre. Hochschulpanning 8. Weinheim, W. Germany: Beltz, 1970.

Griese, J. *Kapazitäts nutzung un hochschulbereich*. Weinheim, W. Germany: Beltz, 1970.

Hussain, K.M. Comprehensive planning models in North America and Europe. In T.R. Mason (Ed.) Assessing computer-based systems models. *New Directions for Institutional Research (No. 9)*. San Francisco: Jossey-Bass Inc., 1971, pp. 87–104.

Hussain, K.M. *Institutional resource allocation models in higher education*. Paris, France: Organization for Economic Cooperation and Development, 1977.

Hussain, K.M. *Modèles d'affectation des resources pour les établissement d'enseignement supérieur*. Paris, France: Organisation de Coopération et de Développement Économiques, 1977.

Hussain, K.M. and Freytag, H.L. *Resource, costing and planning models in higher education*. Pullbach bei Munchen, W. Germany: Verlag Dokumentation, 1973, p. 144.

Menges, G., Elstermann, G., and Rommelfanger, H. *Kapazitätsmodelle*. Hochschulplanung 4. Weinheim, W. Germany: Beltz, 1971.

Organization for Economic and Cultural Development. *SOM—A simulation model of the education process*. CERI/EG/DM/70.01. Paris: OECD, 1971.

POLICY RESEARCH AND ANALYSIS: THE CHOICE OF MODELS FOR INSTITUTIONAL RESEARCH

Cameron Fincher
University of Georgia

The intent of this paper is to take a critical look at the role and functions of institutional research in determining policy at institutional, state, and national levels. The paper is predicated on the judgment that institutional research continues to face an identity crisis and may still be floundering in its efforts to carve out a specific function in academic administration and governance. It is based also on the belief that policy research and analysis constitute acceptable models for institutional research that should be closely examined.

Since the emergence of institutional research in the early sixties, numerous unifying or organizing themes have been suggested or advocated but, more or less, rejected. Institutional researchers have shown a remarkable inability to agree on general concepts and principles that would give the field or specialty a nomothetic basis. Institutional research has not achieved disciplinary status in higher education, and no logical structure, conceptual framework, or theoretical base has been established that clearly distinguishes institutional research from other forms of inquiry and analysis in an institutional setting. Efforts to deal with professional standards of training and performance, or to define specialized roles and responsibilities, have been sporadic and largely unsuccessful. The enthusiasm, capability, and generosity of institutional research's "first generation" have not been sufficient.

Through it all, institutional research has retained its idiographic character. Institutional researchers remain a conglomeration of highly diverse individuals whose sole common experience may be a concern with data collection and analysis—or an annual forum held in interesting places. The data collected and analyzed continue to be institutionally specific despite enormous pressure for comparability and statewide or national aggregation. Much of these data are not converted into policy-relevant information but remain incarcerated by computer or data processing equipment. At no time do the data approach a body of knowledge common to all members of the specialty or profession. The extent to which institutional data are used in administrative or institutional decision making, policy formulation, or program planning is still dependent upon the assigned functions of specific individuals and the credibility they have been able to establish with peers and colleagues.

This may well be as it should be. It is quite possible that the idiosyncratic features of institutional research should predominate and that institutional research on any given campus should be what the president, top administration, or governing body of that institution wants it to be. This could explain why so many institutional researchers settle into supportive or technical assistance roles for crisis management, become consumed by annual budgeting cycles, or become conditioned to subsidiary roles as troubleshooters or anonymous technocrats.

Institutional research as an institutionally specific function would not explain the continuing efforts of institutional researchers to establish a transinstitutional identity. Self-preservation in the form of a friendship "to get the other researcher's data" could explain a part of it. The insatiable appetites of state and federal agencies for data and information could explain the remainder. Yet, there could remain an obvious attempt on the part of institutional researchers to communicate across institutional barriers and to establish some kind of associational identification, to improve standards of training and performance within the specialty, and to achieve a more visible professional status.

Models and Paradigms

The search for nomothetic dimensions may explain why institutional researchers continue to reject specialized roles as planners, evaluators, decision makers, experimentalists, or management efficiency experts. The identity crisis of institutional research may require a continuing quest for professional identities that will eliminate stimulus confusion. Unifying or organizing themes may have been rejected because they were not indigenous to the specialty and did not serve associational or professional aspirations. The more obvious themes or conceptual frameworks that have ostensibly been rejected by institutional researchers are: (a) traditional modes of educational research, (b) measurement and assessment, (c) institutional and program planning, (d) systems analysis and organizational theory, (e) operations research and management science, (f) evaluation research, and (g) econometric and sociological analysis. In each case, the advocacy of each theme or framework has apparently come from individuals who have entered institutional research from traditional or related disciplines, have been able to apply former tools and techniques with reasonable degrees of success, and have contended that institutional research would be the beneficiary if only better structure and discipline were imposed upon the specialty or function. In several cases, the advocacy has been embraced wtih vigor and enthusiasm before "a cooling ardor" encouraged institutional researchers to return to doing whatever the dictates of other moments required. Whatever the residual effects, institutional researchers maintain an observable immunity to nomothetic forces.

Educational research. As the older, more obviously related function, educational research might well have incorporated institutional research as a specialized subfunction. That it did not do so is probably due more to the internal state of affairs among educational researchers than to inherent forms of incompatibility between the two. Educational research has remained the captive of the natural sciences despite its continuous infidelity to basic, experimental, quantitative methods of inquiry. Educational researchers have too often dealt with practical, applied, mission-oriented problems with feelings of guilt, even when prompted by necessity or fleeting moments of intelligent insight. Vows taken in pursuit of a science of education have seldom been forgotten for long, and educational researchers have long been enslaved by a methodology that would ensure the eventual scientific status of their work. An ambitious effort during the sixties to redirect educational research to policy-oriented or policy-relevant concerns crumbled when educational researchers of orthodox bent infiltrated and subverted the regional laboratories, research and development centers, and other extraconventional agencies funded to free educational research from orthodoxy. The tragedy may be that educational research, after knowing moments of lavish financial support, lost most of the credibility it was beginning to gain as a means of influencing educational policy.

In retrospect, institutional researchers may be pleased that their destiny has not been tied too strongly to that of educational research. If there were benefits in traveling together for awhile, those benefits were secondary to the demands of state and federal agencies for more and more data with which to justify continued support for postsecondary education. (See Cronbach and Suppes, 1969; Fincher, 1974; Gideonse, 1968.)

Measurement and assessment. The development and assessment instruments for institutional characteristics promised much in the early years of institutional research. Colleges and universities obviously have personalities of their own, and if valid, reliable measures of those characteristics could be developed, the results would surely be a beneficial matching of institutions and students. Promissory notes were issued with confidence that we would eventually measure or assess the relevant dimensions of institutional life and character and use that information to facilitate the educational progress of students.

The challenge to institutional research was to spend a substantial portion of its energy and resources on the development and use of measuring instruments and devices that would serve a science of institutions. What such instruments obviously needed was objectivity, standardization, and suitable norms for national and regional comparisons. Educational Testing Service launched a commendable effort to develop such instruments and to arrange for their commercial distribution. The American Council on Education initiated an even more ambitious effort to assess and monitor the institutions/students matchings that were taking place nationally. The key to successful, interinstitutional cooperation, and to systematic inquiry of institutional structure and function, was standardized measures similar to those that had been effective in assessing individual abilities, interests, and achievements.

In notable cases, useful instruments were developed and have been used on a broad basis. Institutional researchers who have not used College and University Environment Scales (CUES), Institutional Goals Inventory (IGI), or Institutional Functioning Inventory (IFI) have yet to cut at least one eye tooth. Yet there is reluctance to regard the measurement of institutional characteristics, campus climates, or educational environments a success. Many features of institutions remain obscure, indeterminate, or otherwise inaccessible to specific, quantified measures. Too often, our colleges and universities have proved to be more complex than anticipated and less amenable to systematic inquiry than foresight suggested. In the face of it all, both students and faculty became intractable as subjects of research, and the results of institutional studies became increasingly suspect. More than once, a mystique surrounding the college or university has regained credence. (See Dressel & Pratt, 1971; Dyer, 1966)

Institutional and program planning. If institutional research began as a response to the growth and development of higher education in the late fifties and early sixties, it may be contradictory to contend its relationship to institutional planning has always been strained. The failure of the Association for Institutional Research and the Society for College and University Planning to find a common purpose and membership is indicative of that difficulty. Many institutional researchers have been active participants in institutional planning, and planning has been better from their participation. Yet there has been an obvious reluctance to identify too strongly with campus and facilities planning as those functions have been conducted in many institutions. Despite the apparent dominance of space utilization studies at one time in the development of institutional research, institutional researchers are not well perceived as specialists or experts in planning per se. Even when the two functions are merged in a common title at the vice-presidential level, a cynic can suspect the position will involve a predominance of either planning or institutional research, but not a happy marriage of both. Institutional planning per se may remain an arena in which politicians, architects, engineers, and others of constructive bent contend—but not data analysts and empirical researchers. A cynic could argue with some force that by the time institutional researchers arrive on the scene, most important decisions have been made.

What is true of institutional planning should not, but may, be true of program planning. Periods of uncertain growth or projected decline call for program planning no less intensive than those of rapid growth and expansion. How successful institutional researchers can become in program planning for the future remains to be seen. But there can be no doubt that many programs launched, without benefits from systematic planning, in the sixties are inadequate for the seventies. Program pruning may be less glamourous than program planting, but it could be more essential for institutional survival in an era of declining enrollments and increasing need to serve the demands and expectations of new or nontraditional students. (See Cope, 1974; Dressel and Associates, 1971; Stewart, 1971.)

Systems analysis and organizational theory. Systems thinking has had a pronounced influence on the development of institutional research, and organizational theory has provided insights and viewpoints that have been influential. There is still reason to question the level of sophistication in both systems analysis and organizational theory for a large number of institutional researchers. The literature of the two specialties remains outside the mainstream of much institutional research and is seen as arcane by too many who borrow their concepts and principles without embarrassment. Despite the growth of statewide systems of public higher education, the uses and applications of systems concepts and organizational principles have taken some peculiar twists and turns. There is considerable hesitancy to let the influence of such specialties become too obvious, and there is, perhaps, even more ambivalence about their specific advantages or virtues. The outcome may be one in which systems analysts have made a transorganizational shift to institutions of higher education and statewide boards or coordinating agencies without insisting on previous identities. Much of organizational theory has been resisted with the contention that colleges and universities are institutions rather than organizations as such. While some organizational principles might be applicable at certain stages of institutional development or for specific agencies on campus, the idiosyncratic features of both higher education and institutional research suggest that bows in the direction of specificity or uniqueness should be made frequently. (See Hoos, 1972)

Operations research and management science. Much the same can be said for operations research and management science. Forays into institutional management and governance have been made by specialists from these two fields, but if they remain within the halls of Academe, they usually find it advantageous to take the protective coloration of academic titles. Just as we might say that operations research and management science are different because they each have their own professional association and literature, so we might conclude that institutional research remains impervious to their influences because most institutional researchers do not belong to their professional associations and do not read their professional literature.

A more acceptable reason might be that both operations research and management science are too highly specialized to serve the utilitarian needs of institutional research. Specific tools or techniques might be borrowed when appropriate, and certain concepts and principles may be common to all three fields, but for the most part, institutional researchers lack the specialized skills and interests that characterize operations research and management science. In addition, each has luxuries in time, resources, and facilities that many institutional researchers believe to be missing in their own case.

Evaluation research. The failure of institutional researchers to adopt an evaluative role and function is more difficult to interpret. Program evaluation would appear to be an overt component of what falls within the baliwick of institutional research, and, yet, the major thrust of evaluation research has come from sources far removed from offices of institutional research. While many aspects of evaluation have always been indigenous to education, and while institutional research has occasionally been perceived as "evaluation" in another guise, the major impetus for evaluation research has come from federal funding of large-scale programs in the arena of social action. For all practical purposes, the effort may be dated from the inclusion of specific requirements for evaluation in the federal legislation of the mid-sixties.

The relevance of evaluation research for institutional research should be seen in its differences from traditional modes of educational research and in its immediate and direct applications to much that institutional researchers do. For the present, however, evaluation research continues to be an emerging research specialty in its own right, while institutional research runs hot and cold on its merits. The management responsibilities of academic administrators increasingly require a concern with program evaluation that was not present in an era of rapid growth. Several trends and developments in this respect imply that institutional researchers may become more and more involved in program evaluation, regardless of how much they may prefer a less adversarial role in institutional management. (See Fincher, 1973a; Rossi & Williams, 1972; Weiss, 1972.)

Econometric and sociological analyses. The emphasis placed on educational outcomes and impact in the past decade has given strong impetus to econometric or sociological analyses of educational effectiveness. Most of this research began with the Study of Equal Educational Opportunity (the Coleman report) and was accentuated by the Jencks study that gained notoriety second only to that of the Coleman report. Most of this research calls to question the social and economic benefits of education.

More closely related to institutional research are a number of studies that question the economic benefits of a college education. Both econometric studies and sociological analyses have converged on pessimistic conclusions concerning the effectiveness of higher education in generating benefits that are both societal and personal. If such research does not depict a model worthy of emulation by institutional researchers, it carries an influence on public policy to which institutional research must be attuned and to which institutional research should give a better response.

Cost/effectiveness or cost/benefits models are implied in many of the unifying themes or organizing principles that have been advocated for institutional research. The prominence of econometric and sociological analyses is particularly relevant, however, because of the tendency of such analyses to call into play a different set of assumptions for institutions of higher education. Social and economic mobility has been regarded customarily as a by-product of a college education and not as its sole purpose. The treatment of social or economic mobility as the dominant outcome of education leaves other purposes and functions unattended. (See Juster, 1975; Solmon & Taubman, 1973.)

Policy Research and Analysis

If the idiographic dimensions of institutional research have been dominant throughout its development, there is yet appreciable convergence in what institutional researchers do, the tools and techniques they apply in their work, and the nature and content of institutional studies conducted within the context of administrative affairs and operations. Many responsibilities and functions are increasingly oriented to what can be identified as institutional policy. While it is unlikely that institutional research will develop the theoretical base required for a science of institutions, there are obvious practical, applied, and policy-oriented features in its general composition and thrust. In brief, institutional researchers have clearly opted for a role in which they will not explain the nature and functions of higher education as a social institution but one in which what they investigate, study, and report will be directed to the improvement of institutional functions and activities.

Policy research and analysis provides a coherent conceptual framework that many institutional researchers will not find difficult to accept. It also offers a context in which the professional identity and interests of institutional researchers can be generalized from institution to institution. Whether institutional researchers insist on policy research or opt for policy analysis, as that term is sometimes used, will not be as important as the general agreement that the overall function of institutional research should assist in the formulation of policy. For most purposes, institutional researchers can accept the distinctions that have been made between policy research and policy analysis in terms of their varying emphasis on the empirical, systematic, technical features as opposed to a readiness to deal with logical, conceptual, problem-solving approaches.

The advantages of policy research and analysis as a framework or background for institutional research may be seen in distinctions that can be made in (a) the data base from which institutional researchers work, (b) the methods that are adaptable to institutional research as a specialized approach, and (c) the subject-matter domain of the field or specialty. For convenience, these distinctions are presented in Table 1 as continuums on which policy research is oriented to the upper end or the right-hand side. All distinctions need not be accepted to convey the general shift of emphasis that is involved, and some may overlap or be redundant.

As shown, the distinctive features of policy research are primarily a matter of perspective, emphasis, or intensity. The difference from traditional modes of research, either educational or social, is seen in the shifts that have taken place in research methodology over the past decade or so. Some distinctions are similar to those that have been made frequently between basic or pure research and applied or mission-oriented research. The tendency to perceive such differences as all-or-none characteristics, however, has sometimes obscured the fact that they are more often a matter of degree than a difference-of-kind.

Data base. The distinctions intended in data for policy research reflect the differences in method of inquiry and the overall subject-matter domain. The intent, nonetheless, is to show that a different kind of data or information is needed for policy decisions, that different modes of collection may be necessary, and that the way in which the data are stored and retrieved will vary from data that are used in experimental or survey research. The most important aspect of such data are their orientation to the needs of consumers or users that may be exterior to the policy under consideration. Experimental research, in contrast, usually specifies that data be collected after a problem has been identified, a hypothesis formulated, and a particular research design carefully chosen or devised. Policy research is more likely to be conducted with data on file but without the benefits of anticipating its usage. Another way of saying this is that the data base for policy research is more likely to be administrative or statistical records that have been gathered for other purposes.

The emphasis on the credibility and fidelity of data or information in policy research should not be regarded as a substitute for its validity and reliability. Both credibility and validity are needed in policy research, but credibility comes into play in policy research in a way that it does not in traditional modes of research. In the latter, valid, reliable data are usually convincing; in policy research, a lack of credibility may completely undermine the acceptance of the research, irrespective of other standards of validity and reliability.

Methodology. The intention of the distinctions in methods of inquiry is to show quickly that, when policy research is involved, the researchers are not conducting experiments. This is simply to say that their approaches and procedures are different because their purposes are different. They are not testing a hypothesis as much as they are developing or demonstrating a possibility. The research effort will not prove or confirm any theory or hypothesis, but it may well demonstrate the feasibility or advisability of a certain course of action. The perspective is radically different, and a cynic has reasons to suspect that individuals trained in traditional or conventional methods of research will make the transition to policy research only with great difficutly. It might even be concluded, on the basis of experience, that it can not be done by most of us who were so trained.

Subject-matter domain. The most important distinction in policy research pertains to the subject matter, content, or point of what we are talking about, its relevance, or its nature and substance. Here the shift in perspective is more radical than in data or methods. Where traditional modes of research seek a relationship between antecedents and consequences, policy research is attuned to alternatives that are permissable in the future as well as to their likely consequences. Where traditional modes work toward conclusions that will explain some natural phenomenon or event, policy research hopes to derive recommendations for specific action that can be interpreted to unsophisticated audiences. In much the same manner, if traditional modes aim for a general theory that will answer the question how, policy research is concerned with choices and decisions that must be made in the present and in the future. The conditions may be given; the problem is which?

In addition, there is an obvious difference in what is expected to come out of the process. Traditional modes have sought knowledge with the hope that such knowledge would conform to natural laws of one sort or another. Policy research is far less ambitious. It hopes to get a handle on the situation, derive an understanding or appreciation that may be unique, and be able to specify actions that can be planned or programmed. The expectation and the outcome is different both in a subtle and in a complex manner. The good policy researcher is as hard to find as the good educational researcher.

In closing, let us hope that policy researchers will not be as difficult to find as educational researchers who know something about both education and research. At the same time, we should recognize that they will not be found as often as institutional researchers. Several possibilities suggest that we are policy oriented, but we are not policy sophisticated—yet.

Table 1

A Schema for Policy Research and Analysis

Data base	
Theory-oriented	User/product-oriented
Conclusion-oriented	Decision-oriented
Norm-referenced	Criterion-referenced
Validity/reliability	Credibility/fidelity
Methodology	
Experimental design	Quasi-experimental design
Classical sampling statistics	Statistical decision theory
Summative evaluation	Formative evaluation
Prediction as verification	Forecasting as instrumental
Hypothesis-testing	Developmental-demonstration
Subject-matter domain	
Antecedents lead to consequences	Alternatives lead to consequences
Conclusions provide explanations	Recommendations with interpretation
General theory answers how?	Choices and decisions answer which?
Nomological nets that are law-like	Idiographic structures that are unique
Knowledge as the outcome	Planned and programmed action

References

Brumbaugh, A.J. *Research designed to improve institutions of higher learning.* Washington, D.C.: American Council on Education, 1960.

Campbell, D.T., & Stanley, J.C. *Experimental and quasi-experimental designs for research.* Chicago: Rand McNally, 1963.

Cope, R.G. (Ed.). *Public policy: Issues and analyses.* Tallahassee, Florida: Association for Institutional Research, 1974.

Cronbach, L.J., & Suppes, P. (Eds.). *Research for tomorrow's schools: Disciplined inquiry for education.* New York: Macmillan, 1969.

Dressel, P.L., & Associates. *Institutional research in the university.* San Francisco: Jossey-Bass, 1971.

Dressel, P.L., & Pratt, S.B. *The world of higher education.* San Francisco: Jossey-Bass, 1971.

Dyer, H.S. Can institutional research lead to a science of institutions? *Educational Record,* 1966, *47,* 452–466.

Etzioni, A. Policy research. *American Sociologist,* 1971, *6,* 8–12.

Fincher, C. Program evaluation: Approaches and procedures. In R.G. Cope (Ed.), *Tomorrow's imperatives today.* Tallahassee, Florida: Association for Institutional Research, 1973.(a)

Fincher, C. *The purpose and functions of policy in higher education.* Athens, Georgia: Institute of Higher Education, University of Georgia, 1973.(b)

Fincher, C. *Technology transfer and political decision-making: The conflict in models.* Athens, Georgia: Institute of Higher Education, University of Georgia, 1975.

Fincher, C. COBRE and the dilemmas of basic research in education. *Educational Researcher,* 1974, *3*(2), 11–13.

Gideonse, H.D. Research, development, and the improvement of education. *Science,* 1968, *162,* 541–545.

Harcleroad, F.F. (Ed.). *Planning for state systems of postsecondary education.* Iowa City, Iowa: American College Testing Program, 1973.

Hoos, I.R. *Systems analysis in public policy: A critique.* Berkeley: University of California Press, 1972.

Juster, F.T. (Ed.). *Education, income, and human behavior.* New York: McGraw-Hill, 1975.

Lindblom, C.E. *The policy-making process.* Englewood Cliffs, N.J.: Prentice-Hall, 1968.

Rossi, P.H., & Williams, W. (Eds.). *Evaluating social programs: Theory, practice, and politics.* New York: Seminar Press, 1972.

Rourke, F.E., & Brooks, G.E. *The managerial revolution in higher education.* Baltimore: Johns Hopkins Press, 1966.

Segal, E.M., & Lachman, R. Complex behavior or higher mental process: Is there a paradigm shift? *American Psychologist,* 1972, *27,* 46–55.

Scriven, M. The methodology of evaluation. *Perspectives of curriculum evaluation.* Chicago: Rand McNally, 1967.

Solmon, L.C., & Taubman, P.J. (Eds.). *Does college matter?* New York: Academic Press, 1973.

Stewart, C.T. (Ed.). *Institutional research and institutional policy formulation.* Tallahassee, Florida: Association for Institutional Research, 1971.

Suslow, S. *A declaration on institutional research.* Tallahassee, Florida: Association for Institutional Research, 1972.

Weiss, C.H. *Evaluation research: Methods of assessing program effectiveness.* Englewood Cliffs, N.J.: Prentice-Hall, 1972.

Wildavsky, A. Rescuing policy analysis from PPBS. *Public Administration Review,* 1969, *29,* 189–202.

Yee, A.H. (Ed.). *Perspectives on management systems approaches in education: A symposium.* Englewood Cliffs, N.J.: Education Technology Publications, 1973.

RECENT ADVANCES IN ECONOMIC THEORY: THEIR RELEVANCE TO EDUCATIONAL POLICY

Patricia Burdett
University of Wisconsin

University policy objectives represent the stage between conceptualization of theories of education and their realization in plans or programs. This paper is based on the notion that economic theories of education can provide to institutional planners useful insights which might otherwise be missed and that an understanding of those theories can help policy makers to be more efficient in the utilization of resources and more effective in the accomplishing of objectives. A clear notion of the major theories provides a strong base from which to attack the efficiency questions faced by institutional administrators.

It is usually assumed that planners are clear about university outputs as well as inputs, that they understand both the purposes of higher education and the processes involved in achieving them. Every administrator and each academic has a theory of education; that is, what its objectives are and how those objectives are reached. The traditional view, on which most of modern higher education rests, is called by economists the ***human capital*** approach. It holds that education improves individuals by making them more productive and that individuals undertake education beyond school because it offers increased lifetime earnings (arising from enhanced productivity). An investment in human capital pays off in the future, just as does a worthwhile investment in physical capital. Education is a good thing because it changes individuals in socially desirable ways and enables those individuals to increase social net output more than would otherwise be the case. Individual output (and, therefore, income) is enhanced; but spillover effects magnify the impacts of education even more. The trained physician not only enjoys a high income; he also improves public health, decreases worker absenteeism, reduces pain and suffering, and so on. Governments are willing to support higher education because they value the perceived net social gains from it.

In contrast, theories of higher education recently developed by economists characterize the university as a filtering mechanism, the fundamental purpose of which is to sort and label individuals for the job market. Universities do not change or improve students; instead, they provide employers with information. Insofar as this view describes reality (or elements of it), the implications for institutional planning and administration are profound. This paper first reviews traditional economic theory of higher education (human capital) and then explains newer ideas (filtering, testing, screening, self-selection). Both educational and policy implications are discussed. It will be argued that, even when the newer theories appear to have some validity in the present situation, universities serve a different but socially useful allocative function.[1]

Human Capital Theory

The most widely accepted objectives of higher education are based upon a theory—the human capital theory—which by the early 1960s had appeared in the literature of economics in well-developed form (Becker, 1964; Schultz, 1963). Its definitive tenet is that education improves abilities, or job skills. Education enhances an individual's productivity. Expenditure on education is an investment, in the same sense as capital is an investment—by foregoing present income, greater returns can be obtained in the future. Education builds human capital, or productiveness. From the point of view of society as a whole, higher education removes students from the labor force in the short run, but these students are transformed into more productive workers in the long run. Higher education is presumed to enhance job skills, to add value to the person experiencing it, and, by doing so, to increase aggregate output. Therefore, society is willing to sacrifice immediate output for greater future output and, so, supports education.

The individual takes a different perspective with respect to higher education. Human capital theory says that persons participate in higher education as a matter of self interest. They want to increase lifetime earnings. They are, other things being equal, income maximizers and, in order to optimize future income, they are willing to forego present earnings, to invest in themselves. They will continue to invest, through higher education, until the cost outweighs the value of future payoffs they expect. In economic terms, persons tend to invest until their marginal costs equal the expected marginal returns. Adam Smith's "invisible hand" deserves a nod at this point. If each individual behaves in a selfish (income maximizing) way, social welfare will be maximized as well, as measured by net aggregate output. Future income will be optimized relative to present investment expenditure, and earnings will be foregone.

Human capital theory makes the job of the university quite clear; it is to add value to, and to improve, the student. It implies that the skills level is known when persons enter the university and when they leave and that the latter should be higher than the former. Figure 1 illustrates this concept. If S represents the skill level necessary for successful degree completion and an individual's "learning curve" shows the improvement in skills over time, the student who enters at time 0 with a low skill level, S_1, may never be able to reach S. The more clever student, say one who enters with skill level S_3, exceeds S in time t. Time t is assumed to equal three years in some countries (for example, the United Kingdom) and four in others (the United States). Students with initial skill level S_2 will reach S only if given more time; their achievements do not warrant a degree, but at the end of the three or four year course their value added is represented by S_2B. The value added to the lower skilled student is S_1A and to the highest S_3C.

It should be noted in passing that society is traditionally elitist and chooses to open higher education to those judged able to succeed (by earning a degree). It may be the case that the value added by higher education to less capable people is greater than that added to more clever ones. Higher skilled individuals already have a relatively high marginal product, and more education applied to them may increase total output less than would be the case if the same amount of education were applied to the lower skilled. This does not mean the latter necessarily exceed the attainments of the former, which is unlikely, only that the volume of value added may be greater in educating them; i.e., S_2B may exceed S_3C. Insofar as this is the case, social welfare would be improved by educating the less skilled, and our selection criteria are all wrong.

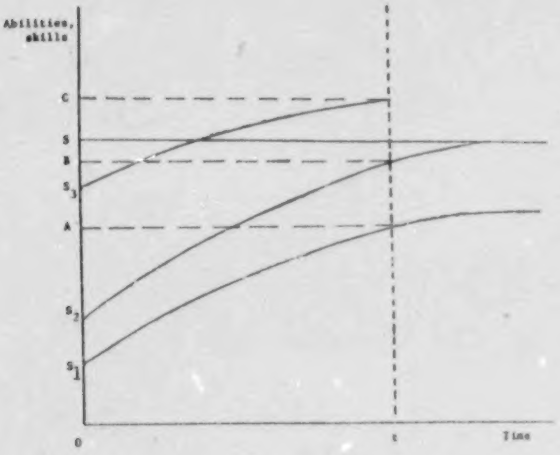


Figure 1. Value added in higher education.

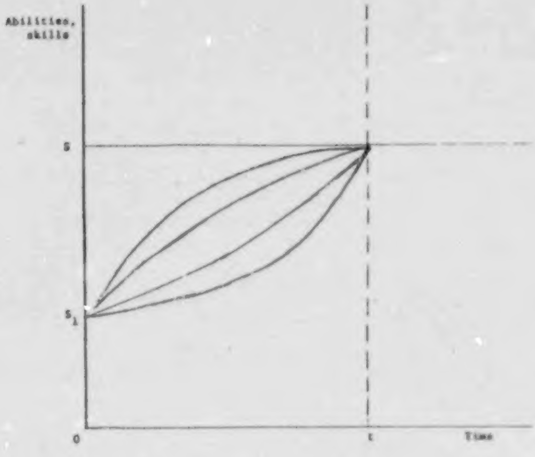


Figure 2. Alternative learning paths.

Figure 2 formalizes a typical planning problem, namely, cost efficiency in the process of building human capital. Assuming that *S* again represents level of achievement necessary to earn a degree and that the course in question is one where all entrants have skill level S_1; the course covers *0t* in time. The length of the course is not a variable. Each of the learning curves along which students might move from S_1 to *S* represents a different combination of resources (staff, space, equipment, and so on) and to each of them is attached a set of costs. The academics and educational technologists must translate the learning paths into levels of resource requirements so that the administrator can cost each possible combination of inputs. One cannot rely on intuition in determining which is cheaper; e.g., the uppermost path implies that students have high amounts of resources devoted to them early on, getting them to relatively high skills levels before half the course is over, after which, perhaps, they work on their own a great deal.

If time is a variable, and cost levels attached to different course lengths can be considered, then the job is more complicated. The learning curve may have even more configurations because it may vary in length. If a single most efficient path can be determined for each relevant length of course, then one can think in terms of minimizing costs in a time dimension, as well as educationally. Figure 3 illustrates that, in a very short period of time, costs of getting students to the required skills level for graduation would be very high indeed. If a course is made excessively long, costs become very high. Somewhere between, there is a time period that minimizes costs, given that various educational methods have been costed and the most efficient one chosen for each time period.

Educational goals have been stated in terms of human capital improvement, and methods of building the required amount of human capital have been determined by academics and educationalists. When these alternatives are presented to the administrator, he or she must find cost-efficient methods of fulfilling the human capital goals. This specification of the problem is deceptively easy because we have assumed clearly defined outputs and inputs. The policy maker will recognize our justifiable folly.

Human capital theory dictates that the job of the lecturer is to impart knowledge, to add value to the student. The more education that is undertaken, the more the student knows and the higher his or her skills level. Since university effectiveness is judged in terms of how much value is added, the teacher's job is clear. Teachers must increase the skills level of their students and, presumably, be able to measure the degree of success in so doing.

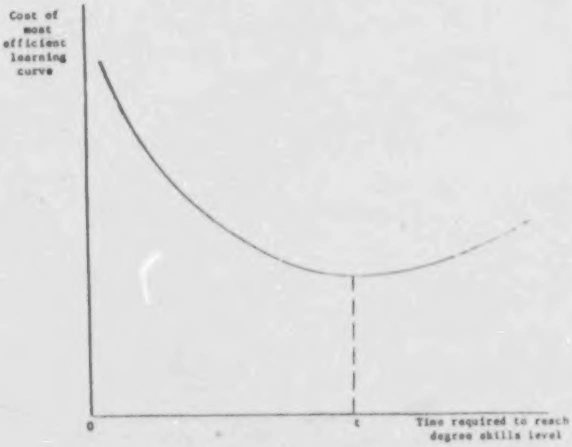


Figure 3. Costs of education by length of course.

And so, the general human capital framework of education has developed. Society favors it because citizens improve their contributions to aggregate output, and individuals participate because it increases their expected lifetime incomes. Universities accept students with given levels of abilities and graduate them later with higher levels; lecturers provide the teaching resource for so doing; administrators both organize the whole procedure and try to minimize its cost within the planners' framework.

Screening Theory

During the last few years, economists have developed newer models of education which are based upon different postulates and have enormous implications for university management. The essential and unifying feature of these models is that the university is seen as an information creator, not as a builder of productivity or transformer of students. The analytical development of this approach is so new that it has not yet acquired a generic label; but a *screening theory* of higher education (see Spence, 1972) will identify it to economists and will serve our purposes in this paper. Variations of screening have been labelled filtering (Arrow, 1973), sorting (Stiglitz, 1975), self-selection (Stiglitz), and testing (Burdett and Mortensen, 1976). Such theories are already firmly embedded in economics literature, but most educators and policy makers are not yet familiar with their elaboration and implications.

The essence of the screening approach is that education improves information about individual skill level. To illuminate issues at hand, we assume in this section that higher education does not fulfill the human capital function. In contrast to human capital's school of thought, screening theory (in its simplest form) presumes that education does not improve individual skills. It serves instead as a sorting device. It provides labels for the capable, and its whole function is to determine who is, and who is not, worthy of such a label. Students enter the university with particular skills levels, and it is the job of the university to determine, as accurately as possible, what those levels are, then to provide any potential employers with that information. According to this theory, education serves a useful function by improving information in the labor marketplace and, thus, facilitates an efficient allocation of resources.

Empiricism in the field of the economics of education has so far been concentrated largely on correlating earnings levels with educational achievement levels, or qualifications earned (Taubman and Wales, 1974). The conclusions are familiar: more education usually means higher income. But, if higher education is serving only a screening function, earnings profiles do not look very different. A university degree signifies capability, which is also the case according to human capital theory. So why bother considering new models with different objectives for higher education? The answer is of far greater significance—for the student, for employers, for university academics and administrators, for society at large—than just earning profiles.

If the university is only a filter, or a sorter, its job is to separate the more capable students from the less capable ones. In its simpler form, filter theory postulates this as the sole function of higher education—picking out those deserving a favorable signal in the job market and awarding them the appropriate label. The introduction of self-selection enriches the analysis. A major reason that higher education is a good filter (insofar as it is) stems from the operation of self-selection. By and large, more capable individuals are drawn to the characteristics of higher education: the necessity for self-discipline, opportunity for study and reflection, the payoff to scholarly work. Universities can (and, of course, do) implement policies which attract whatever sort is considered desirable. The basic idea here is that the university filters largely through the mechanism of self-selection.

An uncomplicated model will illustrate some of the implications of the filtering hypothesis. Suppose that anyone who goes through the university obtains, afterwards, a wage of w_2. Individuals who do not go to the university receive w_1, where w_2 is greater than w_1. We assume that there are only two types of individuals, skilled and unskilled. The former can purchase higher education at cost c_2; cost to unskilled is c_1, and c_2 is less than c_1. This can be explained in several ways: skilled persons can reach a particular grade point average with less effort than can the unskilled; or the more skilled simply like the education process better. In the latter case, costs represent disutility of college attendance.

Next, assume the following:

$$w_2 - c_2 > w_1$$
$$w_2 - c_1 < w_1$$

This implies that only skilled individuals will go to the university. Note that this model differentiates only between skilled and unskilled; it does not yield ability levels beyond that distinction. And it is important that people behave as if they know how skilled they are. The university determines costs (c_1, c_2), which can be any device that is assumed to cause individuals to reveal skill. Course relevance is altogether unimportant. What the university must know is what constitutes an operational screen for high- and low-skill individuals.

Let us assume that higher education does, in fact, serve only as a sorter. The length of time required to earn a degree is one obvious candidate for change. Surely, three or four years are not needed to discover skill levels. Time spent in university could be drastically foreshortened; society could enjoy the production of its skilled members at much less expense and without sacrificing productive activity during such a long educational process.

A very recent version of the screening hypothesis views higher education as a testing process. The university still screens students and presents them to the labor market with appropriate labels identifying their abilities; but here the screening process involves testing students. The job of institutions of higher education is to learn as much as possible about individuals by administering various tests to them.

Another simple model will illustrate the extensive, but contrasting, implications of a testing theory. Assume that all workers can be divided according to two skill levels, one (S_2) higher than the other (S_1). If there is no way for employers to know the difference between the two before hiring them, then some wage ($\bar{w}$) will be paid to all workers which is somewhere between a higher wage (w_2), which skilled workers could earn if their capabilities were known, and w_1, which less skilled workers would be paid if their skill level were revealed. Wage $\bar{w}$ is intermediary also because, in the absence of testing, all workers will tend to claim to be S_2, and since no signals exist, the market wage will be more than w_1 but less than w_2.

Skilled (S_2) Unskilled (S_1)

$$w_2 > \bar{w} > w_1$$

If a testing mechanism exists (e.g., university), the more skilled persons (assuming they know their skill levels) will undertake education if

$$w_2 - c > \bar{w}$$

where c represents the costs of education. If $w_1 - c < \bar{w}$, the less skilled will avoid testing.

Skilled (S_2) Unskilled (S_1)

$$w_2 - c > \bar{w} > w_1 - c$$

Thus, if a high-skill S_2 person is tested, he or she earns w_2. If a low skill person is tested, he or she earns w_1. With no testing, a worker earns $\bar{w}$. If $w_2 - c > \bar{w} > w_1 - c$, only S_2 individuals will choose to be educated. Note that the educated (i.e., tested) have higher incomes and more skills; the uneducated have lesser skills and lower incomes. In contrast with the previous simple model of filtering, testing can provide a continuous range of ability signals. Skilled individuals may use the university as a self-selection device, a way of revealing their true abilities. If it becomes generally understood that this is the case, testing itself becomes unnecessary, because only the skilled apply to be tested. The implications for higher education become rather worrisome.

Further implications for institutional financing emerge. Might it not be reasonable to transfer some of the testing function to the commercial/industrial sector? It seems likely that, for many careers, testing there might be preferable, and it could be argued that this would represent an equitable sharing of testing expense. Students themselves might well be more willing to bear testing costs; higher education becomes a self-selection mechanism for which the highly skilled individuals are willing to pay, assuming they know their own abilities. If they know they are good enough for a label—i.e., there is no risk element involved in testing—they will be willing to pay for the process (assuming lifetime expected earnings are sufficiently high). The fact is that whether education has built human capital or has simply identified talent is not easily discernible in the labor market. A university degree denotes ability, either way.

Some good examples of educational filtering do exist. Oxford University, for example, provides signals to the upper eschelons of the British Civil Service by producing for it graduates whose university training has had little to do with their future work but whose qualities and skills are those desired by the Civil Service. Oxford provides an accepted and reliable filter, and the signal acquired there clearly qualifies one for an income net of university costs that is relatively higher than most incomes accruing to persons not so tested.

Insofar as the university functions as a screening mechanism, the role of educators changes a great deal. It becomes their purpose to learn from their students, not vice-versa. They are expected to apply an accurate label, and so the flow of information is reversed. They do not try to modify the students but, rather, to discover their respective abilities. The changed educational mission of the university has obvious implications for its administrative infrastructure. The concern of the institutional planner shifts from cost efficiency in the process of increasing student productivity to cost efficiency in information production processes. Is the traditional departmental structure still relevant? Does the role of the researcher become more important? What criteria are relevant in selecting staff? On what basis is the student accepted for testing? There are many questions to be considered.

Conclusions

The objectives and the processes of higher education today are clearly grounded in human capital theory. There is little doubt, however, that the screening hypothesis describes some elements of the educational experience. Careful analysis of this approach provides valuable insights into the conduct of higher education and encourages formulation of more realistic and specific organizational goals. Administrators who are aware of the theoretical underpinnings of their work are more likely to provide efficient support to the academic process—that is, to achieve university objectives, and to do so at minimum cost.

Footnote

[1] This last point represents the major contribution of economists' treatments of the screening notion. The idea itself is not new (Jencks and Riesman, chapter 3; Sanford, chapter 2), but the implications, derived from the development of the economic theories, are. In addition, the method of formulation makes possible more rational use and applications of the ideas.

References

Arrow, K. Higher education as a filter. *Journal of Public Economics*, 1973, 2, (3), 193–216.

Becker, G. *Human capital*. New York: Columbia University Press, 1964.

Blaug, M. *Economics of education*. Elmsford, NY: Pergamon, 1970.

Burdett, K. and Mortensen, D. *Testing for ability in a competitive labor market*. A paper presented at the National Bureau for Economic Research, National Science Foundation conference on theoretical industrial organization, University of Illinois, Champaign-Urbana, December 1976.

Fielden, J. and Lockwood, G. *Planning and management in universities*. London: Chatto and Windus, Ltd., 1973.

Jencks, C. and Riesman, D. *The academic revolution*. Garden City, NY: Doubleday and Company, Inc., 1968.

Layard, R. and Psacharopolous, G. The screening hypothesis and the returns to education. *Journal of Political Economy*, 1974, 82, (5), 985–998.

Psacharopolous, G. *Returns to education*. Amsterdam: Elsevier, 1973.

Psacharopolous, G. College quality as a screening device? *Journal of Human Resources*, 1974, 9, (4), 556–558.

Sanford, N. (Ed.) *The American college*. New York: John Wiley and Sons, Inc., 1967.

Schultz, T. *The economic value of education*. New York: Columbia University Press, 1963.

Solmon, L. and Taubman, P. (Eds.) *Does college matter?* New York: Academic Press, 1973.

Spence, M. *Market signalling*. A mimeographed paper from Harvard University, Department of Economics, 1972.

Stiglitz, J. *Information and economic analysis* (Technical Report No. 155). Palo Alto, CA: Institute for Mathematical Studies, Stanford University, January 1975.

Taubman, P. and Wales, T. *Higher education and earnings*. New York: McGraw-Hill, 1974.

PRELIMINARY TRYOUTS OF THE NCHEMS OUTCOMES STRUCTURE AT FOUR COLLEGES

Oscar T. Lenning
National Center for Higher Education Management Systems
Edward G. Lundin
Spelman College

In this "age of accountability," institutional researchers and others have become especially concerned about concretely identifying and understanding the impacts of their institutions on students and society. After two years of concentrated effort The National Center for Higher Education Management Systems (NCHEMS) has developed an outcomes structure, a new system for organizing outcomes and outcome information for purposes of classification, analysis, and decision making. As conceived, this structure has potential use in helping institutional officials to identify educational needs, develop goals, translate goals into more concrete objectives, evaluate the institutions and their programs, raise the awareness of institutional personnel about the need to rethink the outcomes of their institutions or programs, explore whether or not there are important outcome areas that have been overlooked on campus, communicate with concerned publics about outcomes, etc. It does these through direct application to (1) defining outcomes, (2) organizing outcome information, (3) generating lists of priority outcomes, (4) classifying outcomes, and (5) storing and retreiving information.

This paper gives an overview of the structure and reports on a project that attempted, in a preliminary way, to test application of the structure in small liberal arts colleges. The project was cosponsored by the Learning Outcomes Task Force of the Council for the Advancement of Small Colleges (CASC) and NCHEMS. It commenced in the summer of 1976 and was completed in late winter 1977.

The NCHEMS Outcomes Structure

In the early 1970s, NCHEMS staff had developed an *Inventory of Higher Education Outcome Variables and Measues* (Micek and Wallhaus, 1973) that consisted of organized lists of outcomes prominent in higher education, along with definitions and outcome measures or indicators for each. This inventory was used at a number of colleges and universities in goal-setting and goal-translation efforts and was found to be quite helpful. Concerns were expressed, however, that it was not comprehensive enough, that it left out outcomes that are important to some people in higher education. Furthermore, it was felt by many that the instrument should focus on the whole of postsecondary education, not just on higher education. Therefore, an effort was begun at NCHEMS in 1974 to develop a comprehensive structure for the outcomes of postsecondary education.

Before trying to develop the structure itself, it was felt that agreement should be reached on the question, Just what is an educational outcome? Various people seemed to view outcomes in quite different ways, so it was felt that one definition of the word outcome might not be enough for the structure, that the definition might have to be adjusted for different contexts in which the structure would be used. Therefore, an extensive search of the literature was conducted to try to arrive at a concept for educational outcomes upon which different people could agree and that would be especially appropriate for planning, management, and policy-development purposes. Concurrent with this, other comprehensive reviews of the literature were conducted to derive the following: (a) all previous attempts to structure educational outcomes and outcome-related concepts such as goals and objectives that are outlined in the literature, (b) all specific and general outcomes of postsecondary education that are specifically claimed in various portions of the literature to be worthy of concern, and which could be used to test the content coverage of the structure to be developed, and (c) all principles or criteria that could be found in the literature of the field of taxonomy.

The concept of educational outcome that was derived to undergird the outcomes structure to be developed (and which is, thus, a part of the structure) and the principles or criteria for developing and testing out the structure that came from the taxonomic literature are discussed in depth by Lenning, Lee, Micek, and Service (1977). A document discussing the more than 80 previous outcomes classification attempts found in the literature (Lenning, 1977a) is also available.

The concept of an "educational outcome". During the initial phase of developing the NCHEMS Outcomes Structure, a general concept of "educational outcome" was derived which, it was felt, most people could support no matter what their orientation—whether their concern is primarily with efficiency or whether it is primarily with effectiveness. Six general attributes (or characteristics) of an educational outcome were formulated along with five other factors that are important for understanding what a particular educational outcome is all about. For an in-depth discussion of each attribute and factor, see Lenning et al., (1977).

The attributes of an "educational outcome": The six attributes of educational outcomes have been titled: form, change status, focus, neutrality, measurability, and output/impact. Each is briefly described below.

1. Form—This attribute of an outcome refers to the makeup or substance of the outcome, that is, the forms in which particular direct oucomes of postsecondary education, or consequences associated with those direct outcomes, are (or are intended to be) observed and/or measured. The three classes of form are defined as follows:

Product—Tangible, concrete entities that endure, e.g., a program completer, a degree, a job, or a book

Event—Observable, tangible transactions or sets of behaviors that do not endure with time, e.g., a seminar, a concert, a graduation exercise, and being listed in *Who's Who*.

Condition—Intangible but real circumstances, e.g., morale, satisfaction, an attitude or belief, an appreciation, social equity, and achievement.

2. Change status—This attribute was suggested by the extensive work of Derr (1973), who developed a taxonomy of the social function of education that had a concept of change status as its foundation. Two basic change states are possible:

Maintenance—Outcomes that result in keeping the status quo; in stabilization, or in reproduction and preservation, e.g., helping a student to keep basic academic skills from becoming rusty or continuing traditions into the next generation.

Change—Outcomes that result in alteration of the status quo; in modification, revision (improvement or otherwise), or replacement.

3. Focus—Webster's definition of focus is "a point to which something converges," and this attribute converges on the basic, specific *what* that is maintained or changed to constitute the outcome of concern. (Another appropriate name for this attribute would have been *aspect*, as used by the Swedish LIGRU taxomony of educational objectives [Klingberg, 1970].) To illustrate, instruction can involve maintenance or change on such entities as knowledge and understanding, skills and competencies, attitudes and values, appreciations, habits, roles, reputation, gross national product, certification and licensure, jobs, income, family relations, social conditions, etc.

4. Neutrality—The generic concept of educational outcome is a neutral one separated from any inherent value status. It is important that postsecondary educational planners and managers not let values cause them to ignore important negative or unexpected outcomes in their planning assessment.

5. Measurability—This attribute refers to the extent and ease with which a particular outcome or type of outcome can be quantified. Knowledge about measurability has important implications for outcomes identification, analysis, and interpretation.

6. Output/impact—Output has often been used as though synonymous or combined with the term impact, and such a failure to make a distinction between these two important concepts reduces the ability to identify, organize, and analyze outcomes. Distinctions formulated for these two terms are:

Outcomes—The direct end products, events, or conditions that result from the application of the institutional or program processes to transform the various inputs. Examples for institutions are achievement levels, specialization of knowledge, degrees, program completers, publication, and cultural events.

Impacts—The consequences of outputs and earlier impacts for particular individuals, communities, or things. They are the indirect end products of institutional, program, or other activities and processes. Examples of possible (not assured) impacts for institutions include a program completer's increased ability to obtain and hold a job, the security and income or prestige that job gives the person, the increased gross national product that results from increased income of individuals, the increased standard of living and quality of life in society which may be associated with increased gross national product, and so forth.

Other factors important in understanding particular educational outcomes: Although they do not describe the essence of an educational outcome, as the six attributes do, other factors are just as important in understanding the outcome, and in applying outcomes information to planning, management, and evaluation:

1. *Producer/facilitator*—Activities, methods, processes, programs, etc. that cause or influence the outcome to happen, or the conditions that allow it to happen.

2. *Audience*—The persons, groups, organizations, communities, and other entities that receive or are affected by the educational outcome(s) of concern. Not delineating this factor often presents one of the major difficulties in identifying and understanding educational outcomes.

3. *Intended/unintended*—Unexpressed as well as expressed motives for different groups desiring particular outcomes. These are important to consider in planning and management. The potential for unintended outcomes (both those viewed as positive and those viewed as negative) should also be considered in planning.

4. *Functional area*—The function(s) that particular outcomes can or do serve.

5. *Time*—The point in time when the outcome occurs and how long the outcome lasts.

A description of the NCHEMS outcomes structure. The NCHEMS Outcomes Structure has three formal dimensions, where an outcome dimension is a continuum that can be divided into segments along which outcomes can be placed and viewed in relation to one another. These three dimensions are: (a) *audience*—the persons, groups, or entities that receive and/or are affected by (or that are intended to receive or be affected by) the outcome of concern—, (b) *type-of-outcome*—whether or not the outcome involves a change in status (maintenance versus change) and the basic, specific entity that is maintained or changed—, and (c) *time*—the time frame in which the outcome occurs or is intended or expected to occur.

Categories and subcategories (along with standard definitions and associated code numbers) are provided separately for the dimensions. For some purposes, at the institutional, system, state, or federal level, the amount of detail shown at the lowest level within a dimension will be sufficient. For many purposes, however, (and especially within the institution), additional levels of detail are needed. Helpful procedures for adding additional levels of detail to the dimension, for different purposes, are provided. Such a process is called "extending the structure."

It is intended that those dimensions and categories not of serious concern to a particular user of the structure be ignored, or modified and adapted in a way that will better meet local needs and situations. The same is true of the various proposed procedures for using the structure that are presented in a document especially prepared for institutional practitioners (Lenning, 1977b). Planners and managers at the system, state, or federal level should also be able to make use of the procedures, and techniques outlined in this manual. Only some of the application procedures have been tested, and those in a preliminary manner, but the results thus far are positive. For example, the University of Colorado has developed, over a period of years, lists of student outcomes that their staff felt confident were comprehensive for their institution. The person who coordinated the development of those lists was hired by NCHEMS to apply the structure to the lists, using the appropriate procedures in the draft-users' manual, to see if there were any "holes." To her surprise, several of what the University of Colorado considered to be very important outcome categories had been left off of their lists. As a result, they are revising their lists accordingly, which in turn will result in some modifications in their freshman student survey form.

Only time and widespread use in a variety of different institutional and other settings will tell whether the supposed potential of the structure will really bear fruit. Such use will also probably suggest modifications for future versions of the structure and adaptations in procedures that need to be made for different types of users and for different types of institutions.

Trying Out the Outcomes Structure

Two approaches to outcomes identification and validation, each using the NCHEMS Outcomes Structure in a different context, were attempted in the joint NCHEMS/CASC effort. The NCHEMS approach emphasized identification and preferential weighting of outcomes, ordered according to essential, important, and less important outcomes. This weighting then led to questions of institutional administrators, departmental chairpersons, faculty members, and students about assessment and evidence issues. Finally, the discussion moved toward the identification of student activities and experiences which would lead to, precipitate or culminate in the achievement of the outcomes. (A major refinement of this approach that used only the most global categories of the structure was implemented into the planning cycle at one of the participating colleges and was found to be quite helpful for evaluating their institutional and program goals.) The CASC approach, by juxtaposition, was designed to identify and specify learning activities that had three traits:

1. The activity was of a publicly demonstrable nature.
2. The institution could exercise some control over the development and expression of the activity.
3. The activity was expressed within a time frame related to the acquisition of skill or the attainment of an outcome.

Once the activity was specified, the instrument elicited responses which satisfied the criteria question and identified the outcome sought though participation in the activity.

Before commenting on the relative merits of, and reactions to, the approaches, the authors would like to address the problems or needs which suggested these approaches. The problems are the global nature of mission/goals statements, the translation of goals to operational objectives, and the need for determining a connection between what happens on campus and the *raison d'être* of the institution. Outcomes identification is an attempt to hypothesize and realize causal linkage between what a campus expostulates as its mission and those changed behaviors for which the college can be held accountable. Our task force perceived a void between the all-embracing goal statements found in college catalogs and the methods of assessing student achievement—most notable of which are paper and pencil exercises. Hence, the pivotal issue which our task force raised with faculty members is illustrated by questions such as, How do you determine if a student's critical-thinking capability has been enhanced as a result of knowing the content of your course? At the departmental and college-wide levels, similar discussion took place to determine the activities which were perceived to bring about the attainment of intended outcomes.

The central metaphor. As we were participating in the case exercise at one of the colleges, a faculty member raised an objection to the metaphor which encompassed our proceedings—the metaphor of a microscope, which attempted to isolate and identify rich and diverse activities of an educational program. His objection is also reminiscent of Kenneth Boulding's statement that measurement of teaching effectiveness is essentially "measurement of rapport." Furthermore, a faculty member at another institution objected to a mentality which did not value the spontaneous, creative, and personal interaction between faculty and students which cannot be predetermined or assessed. The approaches of both CASC and NCHEMS have been sensitive to these concerns and have attempted to integrate the greatest amount of latitude in areas of activity statements, evidence of achievement, and intended outcomes. While the teaching enterprise is personal, spontaneous, creative, and idiosyncratic, it is also intentional intellectual activity. Our approach has been to document what is intentional and to recognize our limitations regarding the spontaneous energies released in the eduational setting.

In addition to the metaphor of the microscope is the large question of whether colleges can be held accountable for attaining student learning outcomes. At issue are the dynamics of governance, pedagogical intervention, and value-added learning. Governance issues emerge around the question of goal setting and institutional accountability. In other words, must a Xanadu College graduate exhibit attainment of specified outcomes? Issues of pedagogical intervention emerge around student choice and the rites of passage as specified in the general educational, departmental majors, and college-wide requirements. The retreat from requirements spawned in the '60s is being reassessed toward the chary reinstatement of some common learning experiences. Finally, the issue of value-added learning is central to the identification and validation of student learning outcomes. Failing accurate and comprehensive assessment of student capabilities upon entry, colleges cannot expect to take credit for the promulgation of certain student-learning outcomes. Moreover, in the absence of input data on student capabilities, the assessment of specific activities which lead to outcomes becomes academic, at best.

Results of the NCHEMS approach. Since diversity in intended outcomes was desired, it was decided to invite to participate small colleges that were diverse on geographic distribution, size, institutional control, nature of the student population (residential versus commuter and coeducational versus single sex), curriculum, and planning/management orientation. Other important selection factors were the institutional interest in the project and willingness to participate. Once the institutions were identified, each appointed a campus coordinator for the project. Those representatives traveled to NCHEMS for an orientation and pilot implementation session. Participation in this stage signified the institution's commitment to the process and, also, familiarized the institutional representatives with the background and rationale for outcomes idenfication and validation. A vital link was established, then, between the outside group and the institution, thereby legitimizing the endeavor.

The campus coordinators organized CASC/NCHEMS visits to their colleges, convening participants and arranging schedules for individual appointments. A workshop was held at the beginning of the proceedings to familiarize campus representatives with the purpose and procedures for the interaction. Essentially, three activities were scheduled for the workshop:

1. Introduction of CASC and NCHEMS representatives and the outcomes project
2. Orientation of participants to terminology, definitions, and use of materials for outcomes planning at the departmental level
3. Participation in role playing about the use of outcomes concepts as a basis for allocation of funds at the institution-wide level.

After the role-playing exercise, the CASC representative offered observations, and the participants were asked to comment on the exercise and materials provided.

Individuals were interviewed during the next one and one-half days by Lenning of NCHEMS and the CASC representative visiting on campus. Interviews followed a specially prepared interview instrument.[2] Faculty members, students, and administrative personnel were asked to comment on institutional outcomes but, more importantly, to concentrate on student-learning outcomes that they desire (or intend/plan to bring about) for students in their program areas.

Priorities that different groups gave to the various outcome structure, type-of-outcome dimension categories at each college, are presented in Table 1. (Because of the small numbers of respondents, percentages could not be used.) These data are discussed in depth in Lenning (1977c) along with (a) specific outcomes suggested as especially important for various priority categories, (b) concrete measures and indicators which can provide adequate evidence that the outcomes of concern have occurred, and (c) the student activities and experiences that the various respondents felt would most contribute to bringing about the particular outcomes they had emphasized as being

Table 1

Priority Ratings of Outcome Categories by Three Classes of Respondents[a]

	Administrators				Faculty Members				Students			
	College A (n=7)	College B (n=8)	College C (n=8)	College D (n=0)	College A (n=9)	College B (n=8)	College C (n=5)	College D (n=12)	College A (n=4)	College B (n=3)	College C (n=3)	College D (n=2)
Competence and Skills												
2210 Academic skills	5.4.1	6.1.0	8. 4.0		4.10.1	6.2.0	5.3.2	12.4. 1	1.3.1	0.3.0	4.0.0	2.2.0
2220 Citizenship and family membership skills	5.5.2	2.2.2	11. 0.1		2. 8.5	1.4.2	1.7.2	2.2.13	1.2.2	0.0.3	1.3.0	0.0.4
2230 Creativity skills	4.3.3	3.3.0	4. 6.2		12. 3.0	4.4.0	5.3.2	10.5. 2	3.1.1	3.0.0	0.4.0	0.3.1
2240 Expression and communication skills	6.3.1	5.2.0	11. 1.0		14. 1.0	7.1.0	5.4.1	10.6. 1	5.0.0	0.3.0	2.2.0	1.3.0
2250 Intellectual skills	4.6.1	6.1.0	8. 2.0		11. 4.0	7.1.0	6.4.0	14.3. 0	2.3.0	3.0.0	0.4.0	3.1.0
2260 Interpersonal, leadership, & organizational skills	6.2.2	3.3.0	11. 1.0		9. 4.2	3.2.3	2.5.3	3.6. 8	3.2.0	0.0.3	3.1.0	0.4.0
2270 Ocupational skills[b]	6.2.2	2.4.1	3. 7.2		6. 7.2	3.4.1	2.4.4	4.9. 4	2.2.1	3.0.0	2.2.0	0.2.2
2280 Physical and motor skills	3.4.3	0.3.3	4. 7.1		4. 6.5	1.2.5	1.2.7	0.1.16	0.3.2	3.0.0	0.1.3	0.0.4
Knowledge and understanding												
3100 General knowledge and understanding	10.0.0	5.2.0	11. 1.0		15. 0.0	5.3.0	6.4.0	12.5.0	2.3.0	0.3.0	3.1.0	2.2.0
3200 Specialized knowledge and understanding	6.3.1	5.0.2	6. 5.1		13. 2.0	6.2.0	6.2.2	11.5.1	5.0.0	0.3.0	3.1.0	4.0.0
Other learning outcomes												
2110 Desires, aims, and goals	6.0.2	3.3.1	10. 2.0		7. 8.0	5.3.0	1.9.0	3.6. 8	4.1.0	2.1.0	1.3.0	1.3.0
2120 Dislikes, likes, and interests	4.3.1	2.3.2	3. 9.0		5. 7.3	2.3.3	3.4.2	2.7. 8	1.4.0	3.0.0	0.4.0	0.2.2
2130 Motivation or drive level	6.0.2	4.3.0	7. 4.1		10. 2.3	6.2.0	1.6.3	9.6. 2	5.0.0	0.3.0	3.1.0	2.2.0
2310 Attitudes and values	6.1.1	5.2.0	9. 3.0		14. 1.0	4.4.0	7.3.0	3.8. 6	4.1.0	0.3.0	4.0.0	2.2.0
2320 Beliefs, commitments, philosophy of life	4.3.1	4.2.1	9. 3.0		10. 5.0	4.3.1	7.2.1	2.5.10	2.2.1	0.3.0	3.1.0	2.1.1
2330 Feelings/emotions, e.g., appreciation & satisfaction	4.2.2	3.4.0	5. 7.0		11. 2.2	1.5.2	4.6.0	7.5. 5	2.3.0	3.0.0	1.3.0	0.3.1
2400 Perceptual awareness and perceptions	6.1.1	4.3.0	8. 4.0		13. 2.0	4.2.2	6.4.0	8.3. 6	4.1.0	3.0.0	2.0.1	2.2.0
2510 Physical fitness and traits	3.3.2	2.2.3	2.10.0		3. 3.9	0.4.4	0.2.8	0.2.15	0.2.3	2.1.1	0.3.1	0.0.4
2520 Physiological health	6.0.2	2.3.2	2.10.0		3. 6.6	0.4.4	0.1.9	1.1.15	1.1.3	3.0.0	1.3.0	0.1.3
2600 Physiological adjustment factors[c]	5.2.1	1.3.0	6. 6.0		6. 4.0	1.3.3	7.2.1	4.2. 8	1.1.1	0.1.0	1.0.0	1.1.0
2610 Advenguarousness and initiative					3.0	0.1		1.5	1.0	0.2	0.1	2.0
2620 Autonomy and independence		1.1	1.0		2.1	0.1		1.2	1.0	1.1	1.0	2.0
2630 Dependability and responsibility		1.0	1.0		2.1			1.1	1.0	0.2	2.0	2.1
2640 Dogmatism and authoritarianism					1.1	0.1			0.1	2.0		
2650 Flexibility and adaptability		2.0			2.2	0.1		1.2	1.0	1.1	2.0	2.0
2660 Habits					0.2			1.0	0.1	1.1		
2670 Psychological functioning		1.0	1.0		1.2	0.1		0.2	1.0	1.1		
2680 Tolerance and persistence		0.1			3.1			1.1	1.0	0.2	2.0	2.0

Additional categories that were stressed by some people (the numbers of people rating it "essential" and "important" are provided in parentheses): 1100 economic access and independence outcomes (0,4); 1200 economic resources and costs (1,3); 1300 economic production (1,0); 1900 other economic outcomes (0,3); 2340 mores, customs and standards of conduct (1,0); 2700 status recognition and certification (0,2); 2710 completion or achievement award (1,1); 2720 credit recognition (1,3); 2730 image, reputation or status (1,3); 2740 licensing and certification (2,1); 2750 obtaining a job or admission to a follow-up program (4,2); 2760 power and/or authority (0,2); 2800 social roles (0,3); 2820 affiliations (1,0); 2830 avocational and social roles (1,3); 2940 career and vocational roles (2,4); 2850 citizenship roles (3,1); 2860 family roles (0,1); 2870 friendships and relationships (1,1); 3300 research and scholarship (1,1); 3310 research and scholarship knowledge and understanding (4,1); 3320 research and scholarship products (2,1); 3400 art forms and works (5,5); 2290 Coping skills (1,0); 2640 openness (1,0); 2620 self reliance (1,0); 2630 sense of responsibility for self and others (1,0); 2830 social awareness and involvement (1,0); 2770 success in graduate school (1,0).

---

[a] For each set of numbers, the digits before the first period indicate the number of respondents rating that outcome category "essential," the digits between the two periods indicate the number of respondents choosing it "important," and the digits after the second period indicated the number of respondents rating it less than important. Some respondents indicated ratings for two or three different types of students.

[b] Because of interview feedback, this category has now been changed to "occupational and employability skills."

[c] Because of interview feedback this category has now been changed to "personality and personal coping characteristics," and its code number has been changed to 2500 so that the categories at this level remain in alphabetical order.

Source: From "Results of the CASC/NCHEMS Small-College Outcomes Identification Project: A summary" by O.T. Lenning, in an unpublished paper for the National Center for Higher Education Management Systems in 1977. Used with permission.

especially important. Although a number of noteworthy variations in patterns for different institutions (and groups within institutions) are noted in Table 1, institutional differences in focus and activities really seemed to stand out when the emphasis shifted to a more specific, concrete level.

As a result of the workshop and interview activities, the following observations may be made:

1. Concept of student learning outcomes is new (and, to a degree, suspect) on college campuses.
2. Role playing the use of outcomes in the resource allocation process can facilitate interaction and communications.
3. It is extremely difficult for most faculty to decide on outcome priorities and to go from detailed outcome categories to specific, concrete outcomes, but they can do so successfully with the help of procedures like those delineated in this approach.
4. Faculties resist the delimitations of outcomes methodology.

The long-term impact of the exercise is difficult to gauge, although the residual effect, as judged by informal comments, has been positive. For example, many of the faculty members outside of education exclaimed that they had never before tried to think in this way about what they were trying to accomplish, and they seemed stimulated.

Results of the CASC approach. The CASC approach to campus selection, preparation of representatives, and orientations differed markedly from the NCHEMS approach. While selection criteria for institution participation were similar, greater attention was given to minimizing the cost of project implementation. Because of limitations of professional staff and money, task force members prepared explanation materials which covered concepts, rationale, and processes of the task force. Two brief reactions are appropriate of this point: first, too much material was sent to respondents; second, too little material was read by respondents. This latter condition necessitated a brief orientation session during most interviews.

Once the campuses expressed agreement to participate, explanatory materials were sent to each campus representative—who then distributed the materials to campus administrators, faculty, and students. CASC representatives (in pairs) interviewed on campus at one-hour intervals, using a special interview instrument. Some of the responses to the concepts and problems were admittedly negative; whether this resulted from ignorance of the material or a thoughtful disdain is difficult to say. Other responses were very positive, as if the concepts of activities-outcomes linkage provided a means of expressing educational practices in a more forthright manner. Overall, it is difficult to say whether the colleges benefited from the interview experience. Some of the factors which mitigated against the implementation were:

1. The lack of awareness of the institution as to what local benefits derive from the exercise and who sanctioned the process.

2. The amount of material sent to each respondent which discouraged some and confused others.

3. The fact that no context had been established for the interview, which meant that the interviewers had to "make their case" to a number of interviewees.

4. The fact that the mechanism for incorporating the interview findings into a planning process were not made clear to interviewees.

Hence, a number of factors diminished the efficacy of the CASC approach. But, starting with a discussion of activities, rather than outcomes, does facilitate early interview discussion. Faculty members, especially, are more ready to talk about activitities than they are about outcomes.

Conclusion

The perceived usefulness of the two approaches. Four factors are perceived to be important in judging these approaches:

1. Clarity of communications—how well were key concepts expressed and understood?

2. Perception of relevance and interrelatedness—how well did respondents incorporate the concept and terminology into institutional possibilities?

3. Institutional responses—did decision makers advance the purposes of outcomes identification and validation?

4. Receptivity and/or resistance—to what degree did respondents contradict or complement the concepts presented in the interview or in other formats?

Clearly, there were both positive and negative aspects to each approach suggested by evaluative statements reported in the previous section. Some of the problems with each approach could probably have been worked out with improved interviewee preorientation, extra practice in interviewing techniques and approach prior to starting the interviews, more careful setting of the stage within the interview, and so forth. Even so, however, a combination of the two approaches may be desirable, and would involve (a) carefully planning orientation workshops, (b) starting the interviews with activities and going to broad outcomes, as in the CASC approach, and (c) going to specific outcomes and then back again to activities, as in the NCHEMS approach.

What, then, are the benefits of the concepts, approaches, and instrumentation as developed by the CASC/NCHEMS effort? Two seem especially apparent. The first is bridge building in the academic institutional planning cycle. Academic planners are confronted with a panoply of expectations and severe constraints on resources. Expectations either become canonized in the college's mission statements or they submerge, awaiting resuscitation through the next foundation grant. Granting consensus on goals, the planners are then confronted with programmatic reinforcement of, or deviance from, goal attainment. A second benefit, that we as researchers have witnessed, is the stimulation of faculty members toward consideration of larger-than-classroom issues. At one college, a professor of chemistry averred that the issues which transcend courses, classes, and departments are at the heart of liberal education. Faculty members who reacted negatively to the concepts of outcomes identification were similarly stimulated to look beyond the shibbofeths and pat assumptions that most of us shield ourselves with. In a sense, outcomes identification brings assumptions about procedures and commitment to purposes out into the open for discussion, debate, and dialogue. Sharing of goals and outcomes among departmental faculty members can be the first step toward collegial relations among all faculty members. The prospect of community building in academic environments can enrich all sectors of higher education, from students seeking guidance and instruction, to professors and administrators seeking a wholeness and unity in the academic enterprise.

The perceived usefulness of the outcomes structure. The NCHEMS approach was built around the outcomes structure, and it did give structure and an impetus to the interviews. However, the code numbers were disconcerting to some, as was the psychological jargon to a few others. And it was not until the interview situation that most interviewees seemed to start sensing real potential significance for the structure. At the end of each interview, if there was time, the interviewees were asked to rate the potential usefulness of the outcomes structure, based on their limited experience with it at that point. Table 2 presents tabulations of their replies. These limited data indicate that the reactions of most respondents to the structure was, by this time, fairly positive. Some respondents did, however, mention cautions and potential problems with the structure. They also perceived some specific uses for it. (The list is available from the authors.)

Table 2

Expressed Opinions of Respondents
Concerning the Usefulness of the Structure[a]

	Did not discuss it	Definitely useful	May be useful	Not useful	Said that they did not understand it enough to judge
College A					
Administrators	5	11	3	3	1
Faculty	10	13	9	0	2
Students	4	6	1	1	0

[a] Each number indicates how many people in that group (identified in the left margin) gave a particular response (identified by the column heading).

The CASC approach was not built around the structure but utilized it in the attempt to make the transition from a focus on activities to a link between activities and outcome areas. In this sense, it was central to understandings of the relationships of activities to the larger purposes toward which those activities are directed. Without the outcomes structure categories, the faculty members could have focused on activities without any systematic examination of the larger purposes. The outcomes structure was also noted to serve as a taxonomic device for communicating outcomes across disciplinary lines.

The evidence thus suggests that the outcomes structure was facilitative in the efforts of both approaches. It is possible, however, that it could have had more of an impact had it been applied in a different way. Furthermore, this is not to suggest that the outcomes structure is complete and of the best possible form and content. As mentioned in an earlier section, it is expected that the structure will continue to develop and be improved as it is used in many different contexts within different types of institutions.

Footnotes

[1] Acknowledgement and appreciation is hereby expressed to the colleges participating in this project, to their campus coordinators for the project, and to the members of the CASC Learning Outcomes Task Force for their contribution to this project's success.

[2] A survey questionnaire form of this instrument has since been developed and is currently being reviewed.

References

Derr, R.L. *A taxonomy of social purposes of the schools: A handbook*. New York: David McKay, 1973.

Klingberg, G. *A scheme for the classification of educational objectives: The LIGRU Project*. Gothenberg, Sweden: Department of Educational Research, Gothenberg School of Education, 1970. (ERIC Reproduction Service No. ED 060 520)

Lenning, O.T. *Previous attempts to ''structure'' education outcomes and outcome-related concepts: A compilation and review of the literature*. Boulder, Colo.: National Center for Higher Education Management Systems, 1977. (a)

Lenning, O.T. *The outcomes structure: An overview and procedures for applying it in postsecondary education*. Boulder, Colo: National Center for Higher Education Management Systems, 1977. (b)

Lenning, O.T. *Results of the CASC/NCHEMS small-college outcomes identification project: A summary*. Unpublished paper, National Center for Higher Education Management Systems, 1977. (c)

Lenning, O.T., Lee, Y.S., Micek, S.S., and Service, A.L. *A structure for the outcomes of postsecondary education*. Boulder, Colo.: National Center for Higher Education Management Systems, 1977.

Micek, S.S., and Wallhaus, R.A. *An introduction to the identification and uses of higher education outcome information*. Boulder, Colo.: National Center for Higher Education Management Systems at Western Interstate Commission for Higher Education, 1973.

MANAGEMENT INFORMATION SYSTEMS AND SIMULATION MODELS: TO BUY OR NOT TO BUY?

Charles H. Farmer
Katherine H. Frame
Richard A. Priest
John Ozment
The University of Tulsa

A few years ago, the Exxon Education Foundation became concerned that institutions in postsecondary education were not cognizant of computerized management techniques. With this in mind, and with a goal of helping academic administrators learn to run institutions better, the foundation embarked upon a program to award over $3.5 million in grants to approximately 60 private institutions throughout the United States. The University of Tulsa (TU) was one of the recipients. The program, called the Resource Allocation Management Program (RAMP), was to last approximately five years.

The University of Tulsa has used its RAMP grant to develop information systems which will permit managers to employ limited resources more effectively. The resource allocation system that has been developed has the potential to assist the university in upgrading its academic planning decision making as these impinge on the use of future resources for instruction. More specifically, it is hoped that the simulation model will be used as a tool to complement the traditional system of curriculum planning by enabling the university to consider direct cost analysis inputs of future situations. The faculty and administration will, thus, be able to use the new system as a sort of testing ground for their idea.

Data of this sort would be useful if the university's administration had to consider an increase or decrease in enrollment due to policy decisions made on particular academic programs. In previous years, when administrators and faculty at the University of Tulsa pondered the impact of this kind of decision, they had to rely on relatively inaccurate estimates. In the future academic year, the TU administration need only feed the proposed enrollment figures into the simulation model and ask what will happen. Not only will the reports show the change in tuition revenues the university should expect, but it will also simulate the less obvious results of changed enrollment such as the number of faculty and resources required to maintain educational conditions. It is expected that when the system is in use, it will provide accurate data for the budget planning process. In that way, it will cause financial documents to correspond more completely with academic documents and will more completely link the budget to the university's objectives and priorities.

For many professionals in the academic world, the debate over money is now as central as that over student life and course content. The quality of that debate will most likely depend on the willingness and capacity of faculty to understand the basics of academic economics. Their involvement in the institution's affairs will continue to increase and could lead to faculty recommendations for the campus allocation budgets. Traditionally, the faculty have been bombarded by combinations of objective and opinion survey methods as well as endless committee work to examine their attitudes on discipline development and institutional priorities. Their recommendations, however, need to be validated by sober and empirically based cost analyses. It is anticipated that this resource allocation system will provide new capabilities for retrospective cost investigation and simulation for costing alternative futures.

Although the resource allocation system provides reports aggregating enrollment and financial data in order to detect trends in academic programs and disciplines, some ancillary benefits have been realized. One such benefit was the process of defining the lines of authority and responsibility more clearly and clarifying specific institutional objectives in order to automate certain policy decisions associated with the system.

To recapitulate the purpose of this resource allocation management system: it is to preserve strong steps already taken that have resulted in fundamental improvements in the budgeting process and academic management and to insure that the trend continues. The resource is better information which is more closely related to the academic management debate than that which was previously available.

The development of the University of Tulsa's Academic Resource Management System was necessarily preceded by the development of three other systems: student records, budget accounting, and payroll/personnel. The student records system was developed as an integrated data base in 1972. Data entry and retrieval are accomplished by terminals in the registrar's office and the admissions office. Voluminous reports (e.g. class lists) are requested by terminal and printed in the computer center at night during the second-shift operation. The system receives data concerning the prospective student at the time of his or her application for admission. The student's data then is kept up to date by terminal in the admissions office until he or she is enrolled, at which time the data becomes the responsibility of the registrar's office and is updated by terminal from that location. Data concerning the student remains in the data base for one academic year after graduation. Reports (e.g. grade distribution, course distribution, and enrollment statistics) are also available from the student records system and are made available to other administrative offices.

Another feature of this system, already in use, is the budget accounting component. This component has recently been converted to an integrated data base. The output is a budget report for all cost center administrators. Expenditures from the cost centers, such as supplies, travel, phone, postage, equipment, staff salaries (not teaching salaries), are reflected. All pertinent data are input by a terminal in the budget office.

The final feature of the system at Tulsa University is the payroll/personnel component through which all employees are paid and data for most governmental reports are stored. This component is run via terminal in the payroll office. Faculty salaries are entered as academic budget commitments for nine-month intervals. The sum of these commitments for a given cost center is then entered as a transfer into the budget for that cost center.

With these three components operational as independent systems, all the necessary data were available for the creation of our Resource Management System. Although TU had already decided to complement the traditional system of curriculum planning with direct cost analysis inputs, they had not solved the dilemma of whether to buy an off-the-shelf package or to design and develop their own Management Information System. A decision was made based on an interpretation of the following germane facts: (a) accurate base data had already been collected, (b) considerable in-house computing expertise was available, (c) the chief academic officer was committed to both planning and more sophisticated utilization of modern management techniques. While these facts were being considered, an apparent golden Easter egg was encountered: a commercially available information system in the form of a do-it-yourself kit called CAMPUS (Comprehensive Analytical Methods for Planning University/College Systems). It was felt that this was the only model capable of providing the detail and disaggregation necessary to simulate the university. It was felt that its focus (primarily on long-range planning and program-oriented budgeting from one to five years in the future) was appropriate for the needs of the university.

The advantages of such a package seemed obvious: (a) it was available immediately with no development cost; (b) the purchase price was low; (c) the complexity of the simulation model reinforced the opinion that it was sophisticated enough to accurately model the university; and (d) it produced a plethora of reports which purported to give an integrated view of university operations allowing users to engage in better financial and curriculum planning. Other reasons for the selection of the CAMPUS model were that it was already operational in several other institutions, there was extensive documentation for the computer software, and there existed an experienced installation team available for consulting on a per diem basis.

After successfully implementing the CAMPUS system, it began to be recognized more and more that the application of better information to the improvement of academic management is a process where uncertainties exist, since the use of information is inevitably tied to the level of desire to use it in the making of policy decisions. The original assumption that the application of new computer systems and output data from them should be linked as closely as possible to the practical affairs of the university had to be faced as well. In view of the desire to achieve distinct results from the creation of information systems, primary emphasis was placed on two things: (a) the application of tested computer software systems to the procedures of resource allocation management and (b) the adaptation or creation of these systems to specific resource management decision areas in the University of Tulsa.

To describe the objectives in another way, a system was desired that related more simply in the beginning and more specifically in the final analysis to the practical planning problems of the university.

CAMPUS IX

Optimistic that it was the best way to achieve these objectives, CAMPUS IX, consisting of several volumes of documentation and a computer tape, was purchased. After only a few weeks of effort, the system was installed. Almost concurrently, the data from the test-case university were successfully run. The next step was to gather data from the three base systems of TU in a form acceptable to CAMPUS IX. The problems encountered were numerous: (a) the documentation provided was not completely consistent with the program operation; (b) system limits, such as number of course offerings, were not always adequate to handle the application; (c) in CAMPUS IX, all courses had to be assigned credit hours which was not the case at TU; (d) for a three-hour lecture/lab course, CAMPUS IX assigned two hours of credit to the lecture and one hour of credit for the lab, whereas at Tulsa all three hours were assigned to the lecture and no hours to the lab; (e) CAMPUS IX provided for only three financial program classifications whereas nine were needed; (f) CAMPUS IX required that an academic cost unit and an academic discipline be one and the same, but at TU an academic cost unit was able to support multiple academic disciplines and an academic discipline could be supported by multiple cost units; (g) there was great difficulty working with the conversion tables that were provided to convert university codes to the codes acceptable to CAMPUS IX. However, it was even more difficult for the users of the output to translate the data back into familiar terms. In fact, so much time was spent in translation that the promised utility of the system was negated by the lack of interest on the part of the users.

It became very clear that if such a system was to be useful at the University of Tulsa, it would have to be easily understood by the user and, at the same time, accurately represent the way the university actually functions. To accomplish that with CAMPUS IX meant extensive modification and rewrite. CAMPUS IX was therefore abandoned after six months of effort.

A decision was then made to develop a new model for use at Tulsa for the following reasons:

1. It would allow for the accomplishment of the previously mentioned tasks and afford the opportunity to take advantage of the state-of-the-art tools connected with integrated data bases.
2. The system could be an extension of existing base systems.
3. The problem could be approached in a modular fashion, that is, the system need not be any more complex than necessary.
4. It could be easily modified because the designers would be on site.
5. The model could be influenced in the design process by the line administrators who would gain the most from utilization of the product.

Having made the decision to go to an in-house design and development of the Resource Allocation System, several objectives were held in mind. One objective was to provide reports giving categories of costs covered by monies budgeted to academic cost centers (i.e. cost centers related to student enrollment such as the Division of Mathematical Sciences, not support centers such as Computer Services.) Another objective was to provide reports giving profiles of faculty activity (i.e. percentages of time spent in various work areas such a instruction, research, committee work, etc.) as well as profiles of teaching loads at various course levels (freshman through Ph.D.). Moreover, it seemed desirable to develop on-line programs to provide a means of examining the financial consequences of eliminating an academic program. For example, what would happen to enrollment in art courses (and, therefore, to the cost per credit hour of teaching art) if art education should be eliminated as a major program?

Although the Academic Costing System (ACS) cannot show administrators what decisions to make, it can provide them with a means of detecting trends in cost based upon historical data. Moreover, the ACS permits university management an overall view of a complex situation.

The ACS is fed with data produced by the three original systems: student records data base (enrollment data), budget accounting (academic cost center budget data), and payroll/personnel (salary data) which is supplemented by faculty activity analysis. Like the Student Records System, the ACS uses integrated data base techniques which allow easy access to data and great flexibility in the way that data can be presented in reports or on a terminal screen. Furthermore, the system incorporates the general concept of the academic cost matrix, enabling costs to be discussed by discipline, by major program, by major within discipline or vice versa. At TU, it was found that the academic matrix commonly referred to as the induced course load matrix (ICLM)[1] is an important concept in our model and a useful tool for estimating impacts of disaggregate student demand.

As previously mentioned in the discussion of problems encountered with CAMPUS IX, the academic cost centers at the University of Tulsa do not correspond to the various disciplines on a one-to-one basis. The division of Mathematical Sciences, for example, supports not only the discipline of mathematics but those of computer science and statistics as well. Each cost center administrator must, therefore, fill out a worksheet to indicate budget allocations to the various disciplines. To illustrate, the chairperson of the Division of Mathematical Sciences might allocate 80% of his or her supplies and expenses budget to mathematics, 15% of the same budget to computer science and the final 5% to statistics. In a like manner, the administration would provide allocation figures in other areas such as staff salaries (not including faculty salaries which are allocated from faculty activity survey data). The ACS data base is designed in such a way that the percents provided by the cost center administrators may be readily translated into costs assignable to the various disciplines.

After the ACS has been loaded with data for a particular academic term, it may be used to provide administrators with two reports, one dealing with costs associated with the various disciplines and the other with costs associated with the several majors or degree programs offered by the university. The Cost of Discipline report (COD) provides term-specific enrollment and credit-hour and cost figures for each academic discipline at each course level. Included are both direct instructional costs and overhead as well as cost per credit hour and cost per enrollment figures. All of the above categories are summarized at the division and college levels and for the entire university.

The Cost of Major report (COM) uses essentially the same format as the COD report. Figures are given for each major at each course level and are summarized for each college and for the university as a whole.

In addition to on-line versions of COD and COM, ACS contains a program to simulate the Elimination (ELIM) of a designated major from the list of TU degree programs. The ELIM procedure may be used in conjunction with COD to project the effect on a given discipline when a major is removed. To illustrate, before the elimination of a specific major at the university, a prediction could be made determining the cost per credit hour increase or decrease for the disciplines associated with that major.

The on-line COM and COD programs provide output similar to that of their batch report counterparts, but cost and enrollment figures are shown only for those majors or disciplines selected at the terminal. In addition, the on-line versions of COM afford the option of displaying discipline-within-major information, while COD allows major-within-discipline figures, if desired.

Accuracy of the ACS depends on the accuracy of the faculty activity data. The University of Tulsa has been collecting data on faculty activity since fall 1975.[2] Faculty activity analyses are one of the more important information acquisition tools available for three important reasons:

1. Faculty, who are the subject of the analyses, represent a significantly large portion of institutional operating dollars expended each year.

2. The ways in which other monies are expended (e.g. supplies and expenses, duplicating, travel, etc.), as well as the amounts of these monies, depend in large measure on how faculty dollars are allocated.

3. Decisions concerning faculty obviously have direct humanistic considerations, whereas the use of other resources such as space, equipment, and time involves indirect humanistic consequences. For example, it would be ludicrous to arbitrarily optimize the use of space while treating faculty displacements as a secondary by-product.

The data collected from the Faculty Activity Survey form a Faculty File. This is then input into the Faculty Activity System which produces two reports: (a) *Teaching Profile* (total and average number of students by course level and academic rank), and (b) *Staffing Profile* (average percentage of time expended by faculty—partitioned by academic rank within discipline, within college).

Academic Costing Systems

The problems faced with the design of academic costing systems have been canonically characterized by Weathersby's (1973) aphorism: "costs are opinions, prices are facts!" The point is that estimating costs with no consideration of prices attached to either the activities or the outcomes of an academic unit must be avoided. We must, however, continue to remember Enthoven's (1970) law which states: "It is better to be roughly right than exactly wrong!"

Although the attempts to apply unit cost analysis to higher education date back to the late 1800s, there has been little advancement and correspondingly little value to improved institutional management achieved from these attempts. The problem is that effective use of unit cost data to support policy decisions can only be achieved if there is a grasp of the implications, limitations, and the relationships of the numbers that supposedly describe our program costs.

We know that cost data in higher education are produced by either cost accounting or cost analysis. In cost accounting, financial transactions are entered in such a way that expenditures are attributable to the ultimate cost object. Cost analysis, on the other hand, places cost to selected cost objects by means of analytic formulations usually pertaining to specific management problems.

The cost-accounting approach (Topping, 1974) is used by the National Center for Higher Education Management Systems (NCHEMS) at the Western Interstate Commission for Higher Education (WICHE). They have developed a standard set of principles and procedures to facilitate interinstitutional data exchange and to improve external agency reporting.

Although it is difficult not to attribute more precision to subjective data than actually exists, the cost analysis approach is generally more useful for input to institutional policy decisions than cost accounting. Farmer (1973) gives four stages in analyzing costs: (a) a listing of the resources required for some purpose, (b) an identification and description of alternative resource uses, (c) an estimation of the values of the alternatives as they relate to goals, and (d) an estimate of incurred expenditures.

In addition to the four stages of analyzing costs, the following statements by Plourde (1976) have been found to be very useful:

1. The process of using a model is as important as the model. The discipline required for data gathering in a uniform fashion for input to the model and the attendant discussion on use of data output is the most viable aspect of model use.

2. Model builders must be aware of and responsive to the desire of model users for simplified input and output.

3. Users must develop data bases to support day-to-day decision-making processes as well as the long-range planning process.

4. All administrators should participate in training sessions keyed to user education. It is one thing to train individuals to build and keep models running, but it is quite another to develop constructive attitudes toward the usefulness of the model.

5. Unless there is an organizational commitment from a high level to integrate the use of the model into the planning or decision-making processes, the model itself will remain a toy for institutional researchers, computer center personnel, and other staff, and few significant benefits will be derived from its use. After all, what does it accomplish to have a perfect computer implementation of a modeling system if, in the end, it is not understood, not supported, or not used?

It is hoped that the present system will become an effective tool for managing the academic cost of instruction at the University of Tulsa. Chairpersons can, for the first time, get an overview of how their academic cost units are performing. Deans can obtain more information on how their colleges are performing and can further evaluate the ramifications of eliminating or adding degree programs. This data, collected over time, can be used to identify trends. To reverse a trend (e.g. lower or raise the cost of instruction), administrators will be told by what percent their budgets must be changed in order to achieve a desired cost level. They then will have to decide where, within their own budgets, change can be effected.

Future plans for the system will allow a dean to simulate a new degree program and observe the effects on all phases of academic costs. The system also can be used for budget projections by using historical data to predict future needs. Additionally, future desires can be articulated and the implications on the total cost of instruction evaluated.

The point to be made is that only the first basic steps have been taken, and future success will depend not only upon the quality of the technical product but also upon the ability of a product to bring about positive change in the university.

Footnotes

[1] The ICLM was conceived, developed, and put to use by Sidney Suslow, Director of Institutional Research at the University of California, Berkeley, in 1957. The entries in the matrix measure the students' average level of interest in courses in all disciplines in every major field of study. The ICLM has played a prominent role, sometimes inappropriately, in simulation models for studies of costs, personnel, and space needs.

[2] Additional information on faculty activity analysis and the resulting reports may be obtained from the Office of Institutional Research, The University of Tulsa, 600 South College, Tulsa, OK 74104.

References

Enthoven, A.C. Measures of the outputs of higher education: Suggestions for their development and use. In B. Lawrence, G. Weathersby, and V.W. Patterson (Eds.), *Outputs of higher education: Their identification, measurement and evaluation*. Boulder, Colorado: Western Interstate Commission for Higher Education, 1970.

Farmer, J. *Why cost analysis for higher education?* Los Angeles: Systems Research, 1973.

Plourde, P.J. *Experience with analytical models in higher education management*. Amherst: Center for Educational Management Studies, University of Massachusetts at Amherst, 1976.

Topping, J.R. *Cost analysis manual* (Technical Report 45). Boulder, Colorado: National Center for Higher Education Management Systems at Western Interstate Commission for Higher Education, 1974.

Weathersby, G.W. As quoted in Presidential unit studies funding of U.S. colleges. *The Chronicle of Higher Education*, 1973, 7, (21).

A FRAMEWORK FOR EVALUATING INSTITUTIONAL PLANNING

Mark D. Johnson
Harold G. Richard
The Pennsylvania State University

Higher education is in the middle of a decade of change. Colleges and universities are faced with enrollments that are leveling or declining, as well as with financial pressures and a crisis of public confidence. These troubles, dimly foreseen during the prosperous days of the 1960s, are now recognized as threatening by most leading educators. The purpose of this paper is to propose a framework for evaluating and developing one of the key processes by which higher education can meet the challenge of the coming decade, that is, institutional planning.

Since the first appearance of the current pressures on higher education, colleges and universities have been advised, coerced, and otherwise influenced to apply a variety of methodologies, techniques, and tools to the solution of the problems besetting higher education. Help and guidance have been sought from management science, operations research, the systems approach, planning, programming, and budgeting systems (PPBS), and management information systems (MIS), to mention a few. These methodologies, techniques, and tools have been applied in many institutions with only modest success.

Institutional planning—the root process underlying the above-mentioned applications—needs to be re-emphasized. To achieve its full potential, institutional planning must be developed into something more than a collection of techniques and methodologies. It must be developed into a approach to institutional decision making. Although there are probably as many definitions of planning as there are people who call themselves planners, for present purposes, institutional planning is defined as a cyclical process involving (a) a determination of where the institution is, (b) an assessment of where the institution wants to go, (c) a decision(s) about how it is going to get there, (d) the implementation of that decision(s), and (e) the evaluation and, if necessary, modification of that decision(s). (See Jaquith 1976.)

The planning literature reveals a number of major problems in the area of institutional planning. First, while many institutions are engaged in planning activities of one sort or another, planning is still very much of a developing art. Second, many institutions devote major resources to planning only after they are in trouble. Third, all too often, institutional planning culminates with the production of a static "institutional plan" that does nothing but collect dust on the shelf. Fourth, there has been little systematization of the admittedly modest knowledge on institutional planning into a form that might be useful to practitioners in the process of developing or improving their planning efforts.

Although the first three problems will receive some attention in this paper, the primary focus is on the need to synthesize what we have learned thus far from the theory and practice of higher education planning. The intent of the paper is not to suggest a model for institutional planning. Indeed, despite the evolving nature of higher education planning, it is already evident that there is no single approach to planning that will suit the needs of every institution. Rather, the intent is to distill, from a growing field of experience, a reasonably concise statement of what we have learned and to suggest an approach to applying this knowledge to the improvement of institutional planning.

The paper is divided into three major sections. The first section examines the conceptual literature and the experience of a variety of institutions with respect to five major planning issues: (a) the scope of planning, (b) the structure of planning, (c) participation in the planning process, (d) planning and budgeting, and (e) planning as a *process*. This analysis draws upon the conceptual literature on higher education planning, two major empirical studies of institutional planning (Freeman 1977 and Palola & Padgett 1971) and a variety of institutional planning documents from four major American universities (American University, the University of Pittsburgh, the University of Washington, and West Virginia University). Based on the experience with respect to each of the five major planning issues, the second section of the paper suggests a set of desirable planning process characteristics. Finally, the third section proposes an approach to evaluating an institution's planning efforts, utilizing the set of desired planning process characteristics as a framework for evaluation.

Five Major Planning Issues

The scope of planning. The first planning issue selected for analysis is the scope of planning. Nowhere in the literature is the variability of institutional planning activity more visible. Three sources of variability stand out: (a) the time frame for institutional planning, (b) the comprehensiveness of planning, and (c) the variable emphasis on means vs. ends.

With respect to time frames, long-range planning is generally viewed as planning for five or more years ahead. The modal time period for institutional planning reported in the Freeman survey is five to six years. Only two of Freeman's 23 respondents reported time frames of more than 10 years. Some institutions utilize multiple planning periods within the total span of their planning documents. Another approach is the annual planning update employed in the PPBS model: each year, at least in theory, another year is added to the plan, and the first year of the plan is converted into resource allocation decisions.

The comprehensiveness of the planning process is another variable by which one may differentiate among planning processes. Freeman defines comprehensive planning as "any formal system for integrating long-range academic, administrative, financial, and facilities planning for the total university and its principle components" (p. 26). In addition to functional or horizontal integration, comprehensive planning also implies vertical integration, that is, integration of planning from departmental through college to institutional plans. Contrasted to comprehensive planning would be planning processes of more limited scope—for example, facilities planning or departmental planning. The responses to the Freeman survey suggest that relatively few institutions have achieved the level of integration suggested by Freeman's definition of comprehensive planning. Freeman also found that the comprehensiveness of planning varies by organizational level, with academic departments engaging in the least comprehensive planning (p. 40).

The final scope issue examined here is ends- or goal-oriented vs. means-oriented planning. This dichotomy has been referred to in several different ways. Probably the most common is strategic vs. tactical planning. Fincher (1972) refers to effectiveness vs. efficiency-oriented planning (p. 754). Palola and Padgett use the terms substantive vs. expedient planning (p. 27). Ackoff (1974) speaks of proactive vs. reactive planning. The fundamental distinction involved is whether the planning process is concerned primarily with defining and pursuing institutional goals or whether it is primarily concerned with enabling the institution to respond to environmental forces. Palola and Padgett found that goal-oriented planning occurs at relatively few institutions—primarily, small, homogeneous, private colleges.

Structural considerations. Another source of variability among institutional planning processes is the structure of planning. Three issues stand out: (a) whether or not the planning process should be formally structured, (b) whether it should be centralized or decentralized, and (c) whether it is desirable to employ the existing governance structure or a new structure to perform the planning function.

Planning can be either *formal* (structured) or *informal* (unstructured). Informal or unstructured planning does not imply that planning is not to be pursued but, rather, that it is expected that planning will occur as various offices carry out their respective functions. Formal or structured planning implies that an organization systematically allocates time and resources to thinking about, preparing for, and attempting to influence the future. Unfortunately, there is very little information available about informal planning. However, one point does stand out in literature: if an organization does not deliberately devote some resources to planning, its decision makers will tend to devote most or all of their time to coping with day-to-day problems (Cyert 1975; Haas 1976).

Another important structural issue is whether planning should be centralized or decentralized. The "centrist" argues that only the central administration has the necessary institution-wide perspective and sensitivity to the environment to make decisions about the basic directions of the institution (Cyert). The "decentrist" argues that the expertise required to make decisions and the ability to carry them out resides with the operational or line unit (Brown 1975). The institutional planning documents examined by the present authors suggest that institutional planning is frequently a "top-down-bottom-up" process. That is, it begins with the central formulation of institutional missions and goals; it proceeds to program planning at the unit level; and it culminates with the integration of unit-level plans into an institutional master plan. This multi-tiered approach to planning is worthy of further exploration and development. (See Ackoff; Hoenack 1976; and Neff 1971.)

The third basic issue concerning the structure of planning is whether it is desirable to employ the existing governance structure or a new structure to perform the planning function. The advantage of using existing structures is that planning will be done by those persons and units responsible for implementing decisions. However, Palola, Lehmann, and Blischke (1971) found that when planning is assigned to existing committees or structures, it tends to be given a low priority. Programs of change need active supporters for their implementation. One of the ways this may be accomplished is to establish a separate committee structure for planning (Palola and Padgett, p. 80). The committee or commission approach to institutional planning is discussed further in the following paragraphs.

Participation in planning. Closely related to the issue of structure is the issue of participation in planning. The literature suggests that one of the keys to successful planning—that is, planning that produces operational results—is participation by at least four major constituencies: the institution's chief executive, its line administrators, its faculty, and a full- or part-time planning staff.

The need for strong support from the chief executive is emphasized by both theorists and practitioners. (See Steiner 1976.) Chief executive involvement in the planning process on a day-to-day basis is relatively rare (Freeman). Palola and Padgett found that the most important functions of the chief executive officer are to foster institutional planning, to delegate authority effectively, to open channels of communication, and to confront the task of defining institutional goals (p. 63).

Insofar as planning is a decision-making process, it would seem fairly important to involve those who have major responsibility for implementing decisions—the institution's line administrators. In this regard, it is noteworthy that among the universities surveyed by Freeman, only 30 percent reported participation by academic deans in their central planning bodies. The evidence suggests that at many institutions academic administrator involvement in planning occurs primarily at the college, school, or department level.

Faculty participation in planning would also seem mandatory (a) because faculty perform the line functions of the organization and (b) because, in many cases, they can contribute important substantive and technical expertise. However, in the majority of the 80 institutions surveyed by Palola et al., faculty participation in institutional planning was characterized as light. At the majority of universities surveyed by Freeman, faculty participation in planning occurs primarily at the school or departmental level. Palola et al. found that faculty often refrain from participating in institutional planning by choice—largely because of the lack of rewards for this type of activity. They found faculty participation most often at state and junior colleges where the rewards are greatest for institutional service.

The staff role can be played by a variety of participants, depending on the resources of the institution. Typically, this role is played by a specially organized planning staff, by faculty on release time, and/or by graduate students. Although the planning staff can play an important supportive role, the purpose of the staff is not to plan but to facilitate the planning process (Brown; Knoepfel 1973; Schaffir 1976). Among the institutions examined for the present paper, the primary roles of planning staffs include coordinating the planning process, developing planning procedures and guidelines, compiling plans and planning documents, supporting data, and serving as an organizational advocate for planning.

Planning and budgeting. Although planning and budgeting are often treated separately in the literature, the trend is toward greater emphasis on the need for a linkage between the two. On the one hand, the planning process must include an awareness of resource constraints (Casasco 1970). Equally important, planning decisions must be converted into resource allocation decisions if planning is to have any effect. Palola and Padgett have suggested that in the absence of a planning-resource allocation linkage, "planning in higher education becomes an exercise in futility and master plans become little more than 'paper tigers' " (p. 81).

In almost all of the institutions examined for this paper, there is an emphasis on the importance of planning-budget linkages. Nineteen of the institutions in the Freeman sample cite the need for a better system for allocating resources as a major reason for instituting comprehensive planning. Indeed, Freeman observes that "resource management considerations dominate comprehensive planning at the institutions surveyed, even in schools that are not currently facing specific financial or enrollment problems" (p. 28). However, none of the sources employed by the present authors provided detailed information about successful budget linkage methodologies. The impression conveyed is that techniques such as PPBS and formula budgeting have been employed with only limited success. (See Newton 1976.)

Planning as a Process. The primary focus of this paper is on planning as a process, not on the products of planning. However, planning as a process can be either finite or continuous in nature. In the first case, the objective of the planning process is typically an institutional plan. In the second, planning is a continuous cycle from the definition of goals to implementation to feedback (Eberle & McCutcheon, 1970). The literature on higher education planning appears to favor the latter (continuous) approach because the environment is unstable. Institutions of higher education must remain adaptive to change rather than committing themselves to a firm, long-term direction (Knoepfel; Neff).

Some planners suggest that the most important outcomes of the planning process are process outcomes—e.g., periodic self-evaluation, participation, and communication (Ackoff; Meeth 1967). The critics of this position argue that planning may be nothing more than an intellectual exercise unless and until it results in some operational outcome (Fuller 1976; Palola & Padgett). In fact, most of the institutions examined for this paper require formal, written planning documents at one or more levels of the planning process. The message that can be gleaned from the experience at these institutions is not that there is anything inherently wrong with an institutional plan but that a plan must be part of a continuous and cyclical process.

Desirable Planning Process Characteristics

As previously suggested, it is probably impossible to devise a universally applicable model for college and university planning. The variability of institutional characteristics and needs is too great. Moreover, the previous section suggests that there is a lack of consensus on some of the basic issues in institutional planning. Nevertheless, a review of the five issues discussed indicates that, on the basis of the experience thus far, there may be some basic planning process characteristics that are worth striving for.

First, with regard to the scope of planning, there appears to be a time limit beyond which most institutions are reluctant to plan. That limit is approximately ten years. Increasing emphasis is being placed on the need to integrate academic, fiscal, and physical plant planning. It appears desirable to define and pursue institutional goals, but it is also necessary to monitor and remain responsive to the environment.

Second, with regard to the structure of planning, an institution needs to devote some time and resources to planning. Otherwise, it is likely that planning will take second place to the day-to-day operation of the institution. The resolution of the centrist-decentrist debate may rest with the development of multi-tiered planning structures in which institutional goals are articulated at the central level, the programming function is performed at the college and/or departmental level, and there is a central coordinating mechanism to insure a linkage between means and ends. Planning is likely to receive second priority if it is delegated to an existing structure that has other (especially operational) responsibilities.

Third, with regard to participation, it is essential that the institution's chief executive officer provide strong support for planning, though he or she need not necessarily be involved in the day-to-day planning process. For a variety of reasons, academic administrators and faculty have not generally played key roles in institution-level planning. However, if planning is to be an effective decision-making process, it would appear that greater emphasis must be placed on participation by those who have the responsibility and expertise to implement decisions. A planning staff can play a critical role as organizational advocate and facilitator of institutional planning. However, the planning office should confine itself to a supportive role.

Fourth, with regard to planning-budget linkages, continued emphasis must be placed on the development of effective budget linkage methodologies.

Fifth, planning as a process does have some inherent values—for example, the values of periodic self-evaluation, participation, and communication. However, planning may be nothing more than an intellectual exercise unless it results in some operational outcome. The planning process, as well as its products, must be continuous and cyclical in nature if the institution is to remain adaptive to a changing environment.

Evaluating Institutional Planning

The applicability of the above characteristics to any given institution will vary somewhat with the nature of the institution and the status of its planning process(es). Assume, for the moment, that an institution has engaged in a variety of planning activities over the years—a scenario that is probably quite common. One of the things that any institution should do with respect to all of its activities is to conduct a periodic evaluation or review of those activities. The purpose of the present and concluding section of this paper is to propose an approach to evaluating institutional planning, utilizing the set of desirable planning characteristics outlined in the previous section as a framework for evaluation. The discussion takes the form of three general recommendations concerning the manner in which a planning process evaluation might proceed.

First, the evaluation should be conducted by a committee appointed by the institution's chief executive officer. The committee should receive a charge directly from the chief executive (a) to review the institution's existing planning processes, (b) to consider what types of planning processes would best meet the needs of the institution, and (c) to make recommendations, as necessary, to close the gaps between present and desired planning practices.

Second, the committee should comprise representatives from at least three major constituencies: central administrators, college or departmental administrators (depending on the size and nature of the institution), and faculty. Ideally, the group should be a small one, composed of individuals who are willing and able to devote some time to the effort. If a small group is not politically feasible, there should be a small steering committee within the larger committee to oversee the committee's research and document drafting. In either case, strong staff support should be made available to the committee so that the committee's deliberations can be based on careful and comprehensive data collection and analysis.

Third, the committee should include in its deliberations some or all of the following elements: (a) the institution's existing planning processes (at all organizational levels), (b) the desirable characteristics of an institutional planning process (to which the present paper is addressed), (c) the constraints (external and internal) which influence the direction of the university, (d) the deficiencies in existing planning processes, and (e) recommendations concerning alternative planning processes or planning process characteristics.

The potential risk of this approach is that it may favor the status quo. That is, it may result in an emphasis on the adequacy of existing planning processes. The extent to which this occurs will depend, in large part, upon the membership of the committee. The potential advantages of the suggested approach appear to outweigh the risks. First, it encourages the committee to build upon past efforts rather than to start from scratch. Second, it enables the committee to identify and tap the planning expertise that already exists on campus. Third, this approach is likely to generate campus-wide interest and involvement in the evaluation effort. Fourth, it makes no assumptions about the value (or lack thereof) of the institution's existing planning processes. Finally, the recommended approach includes an effort to draw upon the experience of other institutions. Despite the limitations of higher education planning efforts to date, it is apparent that most colleges and universities have a long way to go before they exhaust the values inherent in studying the experiences of other institutions.

References

Ackoff, R.L. *Redesigning the future: A systems approach to societal problems.* New York: John Wiley and Sons, 1974.

Brown, D.G. The supreme role of faculty in planning: Why and how? In J.N. Nesmith (Ed.), *More for less: Academic planning with faculty without new dollars.* New York: Society for College and University Planning, 1975.

Casasco, J.A. *Planning techniques for university management.* Washington, D.C.: American Council on Education, 1970.

Cyert, R.M. A style of managing a university. *Educom,* 1975, *10,* 2–7.

Eberle, A.W. and McCutcheon, S.C. A systems model for institutional planning. *Educational Record,* 1970, *51,* 66–71.

Fincher, C. Planning models and paradigms in higher education. *Journal of Higher Education,* 1972, *43,* 754–767.

Freeman, J.E. *Comprehensive planning in large research universities.* Unpublished manuscript, University of Pittsburgh, February 1977.

Fuller, B. A framework for academic planning. *Journal of Higher Education,* 1976, *47,* 65–78.

Haas, R.M. *Integrating academic, fiscal, and facilities planning.* A paper presented at the 11th Annual Conference of the Society for College and University Planning, Washington, D.C., July 1976.

Hoenack, S.A. *Academic planning and university budgeting.* Unpublished manuscript, University of Minnesota, May 1976.

Jaquith, D.H. *Planning.* A paper presented at the American Management Association Professional Institute, Chestnut Hill, Pennsylvania, July 1976.

Knoepfel, R.W. The politics of planning. *Long Range Planning,* 1973, 6, 17–21.

Meeth, L.R. Functional long-range planning: Purpose and process. *Liberal Education,* 1967, *53,* 375–384.

Neff, C.B. Planning and governance. *Journal of Higher Education,* 1971, *42,* 116–132.

Newton, R.D. *PPBS in higher education: The impossible dream?* University Park: Center for the Study of Higher Education, The Pennsylvania State University, 1976.

Palola, E.G., Lehmann, T., and Blischke, W.R. The reluctant planner: Faculty in institutional planning. *Journal of Higher Education,* 1971, *42,* 587–602.

Palola, E.G. and Padgett, W. *Planning for self-renewal: A new approach to planned organizational change.* Berkeley: Center for Research and Development in Higher Education, University of California, 1971.

Schaffir, W.B. *Planning for change: Organization for company-wide action.* A paper presented at the American Management Association Professional Institute, Chestnut Hill, Pennsylvania, July 1976.

Steiner, G.A. *Top management's role in planning.* A paper presented at the American Management Association Professional Institute, Chestnut Hill, Pennsylvania, July 1976.

ORGANIZATIONAL ANALYSIS—A NEW ROLE FOR INSTITUTIONAL RESEARCH

Robert J. Parden
University of Santa Clara

Organizational Analysis—A New Approach to Planning

The traditional approach to long-range planning is to establish an institution's mission and goals and then to devise programs to achieve these goals. This approach worked well in a growth period. Now the process may represent time lost if goals are selected for which there is little possibility of achievement. Today's goals, and changes in program direction, must be selected with the knowledge that we must work with what we have and recognize our potential maneuverability in terms of available facilities, resources, and manpower. Incremental changes in new directions are possible. We must, therefore, continue to seek our future course. However, major shifts, previously accomplished using growth funds, are no longer feasible. Organizational analysis is a systematic approach to identifying potential change.

In most institutions, a different approach to planning will not require abandoning one activity in favor of another. There are economies of operation to be realized within every institution once we accept the premise that sustained vitality must be developed from within. In many institutions, we have developed the structure to sustain a much larger operation than we have achieved, or will achieve in the foreseeable future. It is now possible to review that growth and to evaluate it using today's realities.

College and university planning, on a continuing basis, is still not an established activity on most campuses. It is time consuming, and a satisfactory link between planners and doers has not been developed. Long-range plans have accumulated as unique historical events. As a consequence, the planning that is done in colleges and universities is hurried and occurs primarily at budget time when yes or no decisions must be made regarding specific proposals and line item amounts. Organizational analysis seeks to provide a workable approach to identify incremental changes which would allow the re-ordering of priorities by identifying and selecting institution-wide trade-offs. Organizational analysis accepts the premise that, with restricted new resources, little change can be effected unless the scope of one activity is decreased in favor of another. However unpleasant this act may be, it is necessary if the potential for renewal is created in order to sustain institutional viability during this no-growth period—a period that has already arrived at most institutions.

Incremental Budgeting Is Status Quo Management

During the past ten years, the consumer price index has risen 75 percent. The costs of college and university services may have risen at an even higher rate. During this same period, most institutions have reverted to incremental budget formulas —3 to 7% raises for faculty and staff, 4% for supplies, perhaps no change, or a decrease, in capital equipment. Utilities must often be budgeted at whatever level is required to prevent their being disconnected. The consequence has been a gradual, across-the-board, retrenchment in most activities. This has been in addition to any major cutbacks resulting from specific policy decisions. Incremental retrenchment suggests that no reassessment of mission and goals is taking place, i.e., no positive needs have been identified that require positive actions (including cutbacks if necessary) to support new directions. Our purpose has become to continue to do what we did yesterday, albeit at a continually decreasing level of support.

It is possible that this has become the new selected goal—that the forces resisting change, who feel that they are winners with the status quo, are sufficiently powerful so that there is an evasion of the tensions that will develop when reallocation of resources takes place. This may be happening despite the inevitable consequence—a loss of enthusiasm, commitment, and freshness that occurs with growth and is essential to education. It would seem that this enthusiasm should be the inalienable right of the eighteen-year-olds who are arriving on the scene for the first time. It's not their fault that they are arriving at the end of the golden era of higher education. It is not their fault that we undertook a number of activities that we can no longer afford to continue. They can expect that we will seek to sustain the viability which appears to have been the natural by-product of growth and expansion but which now must be sustained in a no-growth environment.

When An Era Ends, A New Era Begins

The era of no-growth is here. We talked about it for five years, and now we have actually experienced our first national decline in college and university enrollment. Even if an institution maintains its enrollment, inflation and the steep increase in costs of heating and cooling will force re-allocation of resources. We have to learn to redirect our institutional energies towards new goals without significant new monies and perhaps with substantial decreases. For the first time in the history of higher education in the United States, we must grow accustomed to a long-term decline, not just some of the constrictions of short-term economic recession.

Some of these realities have already become evident. For the faculty, it is a time of reduced job mobility, stabilized department organization, a limited infusion of younger staff, and more selective rank and tenure processes. For students, it is a time of larger class sections and a reduction in the variety of courses being offered. Few new buildings and decreased remodeling and maintenance budgets suggest that those departments that did not get their new facilities, or remodeled laboratory, or major new equipment "before the valve closed" may need to accommodate for a long, long time. This is the environment which is not very conducive to sustained enthusiasm or program viability. This is the environment in which renewal must take place. Thus, it is not only a matter of resources but also a matter of spirit. Not only must new resources be obtained through reallocation, but new ideas must be nurtured and new enthusiasms kindled in an environment conducive to massive depression. Organizational analysis does not propose to be a wonderful new resource management elixir. It does suggest an approach to finding the means for renewal if there is the desire.

Organizational Analysis—Cataloging Activities

Organizational analysis is undertaken to achieve a number of objectives:

1. To see if current functions can be achieved at lower costs

2. To see if greater service can be provided using the same or higher levels of support.

3. To describe these alternatives in a manner which will assist the decision makers when it is necessary to make a choice.

Colleges and universities have grown incrementally. A program or an activity was undertaken at a particular time because, at the time, it was considered desirable to satisfy some need. It is probable that the activity was added on to the organization rather than integrated into the organization. It is highly probable that the new activity was undertaken by adding new people rather than increasing the work load of existing staff. In the Parkinson (1957) tradition, whatever the original need or intent, enough activity has since been generated to keep everyone busy. Organizational analysis begins with an audit to record what is taking place—who is doing what and for what purpose? It should be remembered that an activity might be accomplished at a lower cost by combining it with another. Or, the activity might provide a higher level of service, at the same cost, if it were performed in a different manner. Or, the activity may have acquired a higher priority in today's environment (career counselling, for example). Or, the activity may have outlived its usefulness. Few participants in an activity will volunteer that it be discontinued, and this is the way it should be, since no one can perform adequately who can see no purpose in the activity. Relative priorities can only be established at some higher level in the organization after the case has been made. To insure that organizational analysis leads to renewal, and not just retrenchment, the appraisal step should incorporate an activity which has been called IDEALS.

IDEALS

Nadler (1967) proposed the IDEALS approach, an acronym for Ideal Design of Effective and Logical Systems. This technique is included in the appraisal step of organizational analysis to insure that the potential for renewal is developed. The IDEALS approach insures that as an activity is being appraised, its total potential is considered. IDEALS suggests that the ideal way to accomplish the purpose of an activity should be developed and included as part of the appraisal to identify additional alternatives open to decision makers in the evaluation phase of organizational analysis. It is possible that the ideal way may be accomplished with no more, and even with less, resources. This approach requires:

1. An emphasis on activity or system purpose, not on the procedure or the organizational structure

2. The development of the ideal way to achieve the purpose or function by considering a great number of other possibilities

3. The identification of the ideal way to accomplish the function. It may be necessary to modify the selected ideal approach to fit the realities of today. Nevertheless, all possibilities will have been considered, and a listing of potentials (the IDEAL way) can become the basis for new goals for future achievement.

It can be seen that by not concentrating on what is wrong with a current activity, which forces participants into a defensive position, it is possible to identify what must be done to satisfy the priorities that are selected.

Evaluation, A Preliminary Step to Decision Making

Having completed the first step in organizational analysis—appraisal—it is then necessary to bring together all of the information in a form suitable for use by the decision makers. The ideal format for presenting the appraisal of an activity is a single sheet of paper. Any more detail will hinder the selection process, since it is desirable for the decision makers to be able to grasp the totality of the organization. The evaluation or consolidation which precedes the decision maker's selection activity should provide an analysis which presents for each activity the following:

1. *Its purpose*—What function does the activity serve? How does it contribute to the achievement of the institution's mission?

2. *Its history*—When was the activity initiated and for what purpose? What has been the history of its growth and development?

3. *Its possible reduced cost*—Can the function be achieved in a less elaborate manner at a lower cost? What reduction in services would result?

4. *Its possible combination with another activity*—Could the activities being performed be assigned to some other part of the organization? Could two simplified activities be combined?

5. *Its possible restructuring*—Can the activity be reorganized so as to provide greater services at the same cost?

6. *Its possible enlargement*—Did the IDEALS process suggest that this is an activity that should be expanded to better meet contemporary needs?

While ultimately all activities are translated into their dollar cost for budget purposes, this is not the emphasis at this stage of an organizational analysis. The emphasis is on purpose: what are we doing and why? And, then, should we do more or less of it in view of today's needs?

At Santa Clara, for example, all classrooms had originally been assigned by the Office of the Registrar. Then, later, an office was created to coordinate conferences. It assumed responsibility for the scheduling of classrooms on weekends when they were most used for conferences. This office also arranged for meals, housing in the dorms for conferees, and other non-classroom facilities. A third office was created that is concerned primarily with housing of undergraduates during the school year when the dorms are not available for conferences. This organization developed as the university grew from 1200 to 4600 students. An organizational analysis would provide a careful review of just what functions are being served, how well, whether or not they could be consolidated as a single activity, and whether Santa Clara could then take on additional conference activities for which there are no funds available at this time.

Academic activities would be reviewed in the same manner (activities which make up academic departments, not the department as a unit). To assist in this appraisal and to evade the errors in unit cost analysis, Parden (1977) proposed that standards be established by policy for class size, teaching loads, variety of elective courses available for department majors, and similar factors, and that the variances from these standards then be used for discussion in the appraisal, IDEALS, evaluation, and selection process.

How does organizational analysis differ from the zero-based budget approach? It does not demand the effort to go to zero and back up. It accepts the reality that few colleges and universities will eliminate departments or activities to meet current needs. Activities will seldom be eliminated and then probably only in times of genuine crisis. Organizational analysis seeks renewal in a no-growth climate. Renewal is a necessary prerequisite to sustained institutional viability and necessary for the people who staff its activities.

Renewal Activities

Sheehy's (1976) best seller *Passages* is a reminder that all of us have predictable crises of adult life. She suggests that the final choice of the middle aged is between renewal or calcification and, further, that there may be a need to prod the resigned middle-aged person toward seeking renewal and revitalization. I see a parallel between individuals and the no-growth, or middle-age, posture colleges and universities have suddenly encountered. A stimulus or prod is necessary now that the challenge of growth and expansion has faded. Organizational analysis seeks to identify where that assistance would be most beneficial, how it might be given and, if resources are the roadblock to sustained vitality, where and how resources might be shifted. The *passages* of life's crises that Sheehy describes are very real in the context of drastically reduced faculty mobility. The large numbers of young faculty hired after World War II are now middle aged and beyond. I see calcification vs. renewal as the central problem facing institutions of higher education for the next twenty years. This renewal will require resources for faculty development programs and for redirecting energies. Organizational analysis can make it possible.

Organizational Analysis and Institutional Research

Organizational analysis might be undertaken by a unit in the finance office, possibly as part of the budget development procedure. It can be directed by an outside consultant. I think it is more appropriate that it be considered as a form of institutional research. The central focus is on the purpose of an activity, how it might be enhanced, and where the activity ranks relative to other contemporary needs such as faculty renewal or development. It is possible that the appraisal, evaluation, and selection can be completed without requiring new dollars. This would be consistent with the idea of renewal from within. The utilization of the office of institutional research has several advantages:

1. It is already an existing organizational unit. A new activity need not be organized.
2. The institutional research office is familiar with data and information already available within the organization.
3. The institutional research staff is trained to consider alternatives and to seek alternative methods for achieving the institution's mission.
4. The institutional research staff is already known to many members of the academic community and will be more readily accepted by them.

Perhaps the remaining question is whether the academic community will accept this kind of activity at this time. I believe the answer is unique to each institution. There appears to be less enthusiasm on the part of both students and faculty for participation in governance—to be part of the discussion, yes; to make the ultimate choices, no. Perhaps this is because the size of the pie to be shared has diminished. Perhaps it is because future directions are not easily developed by committees or groups. The undertaking of organizational analysis requires that some part of the college or university administration provide the necessary leadership to seek change (renewal) in a time when the no-growth syndrome has severely diminished the capacity of members of the academic community to be introspective. If they are convinced that the new students who arrive each fall deserve some of the excitement and enthusiasm that existed when there was growth, then they will participate in an activity that can help sustain viability while we advance through the next passage.

References

Nadler, G. *Work systems design: The ideals concept.* Homewood, Illinois: Richard D. Irwin, Inc., 1967.

Parden, R.J. *Replace unit costs with standard costs and prevent incorrect, computer supported decisions.* A paper presented to the College and University Machine Records conference, Philadelphia, May 2, 1977.

Parkinson, C.N. *Parkinson's law.* Boston: Houghton-Mifflin, Inc., 1957.

Sheehy, G. *Passages.* New York: E.P. Dutton and Company, Inc., 1976.

THE DEVELOPMENT OF EVALUATIVE PROCEDURES FOR THE REDEVELOPMENT OF CRIMINAL JUSTICE EDUCATIONAL CURRICULA

T. Kenneth Moran
James C. Berger
Janice R. McKenzie
John Jay College of Criminal Justice

If "the need for evaluation rarely occurs in an atmosphere of complacency" then the nature, structure, and conditions related to criminal justice educational programs are ripe for such an examination. For, after an era of near geometric growth in the number of criminal justice programs, the field is entering a period of intense controversy concerning the quality of its curricula. This debate centers largely on the development of rigorous criteria by which such offerings may be evaluated. In fact, many of the major national criminal justice organizations, including the International Association of Chiefs of Police, the Police Foundation, the American Society for Public Administration, and the Academy of Criminal Justice Sciences, all are wrestling with these problems.

The purpose of this paper is to argue for a hiatus in this controversy so that institutions of higher education can undertake a rigorous evaluation of the discipline. Hopefully, the data developed in such research projects will provide information necessary for the construction of stringent criteria within which criminal justice programs may be restructured. This is essential, for curriculum reform has a better chance for success if it is based on information concerning how its faculty, administrators, students, and clientele (members of the various criminal justice agencies) evaluate the present and future needs of such an education.

There is little evidence to show that this process was utilized to any extent during the period of intensive growth, and it is feared that the current movement to restructure criminal justice education according to certain philosophical precepts may also advance without the benefit of rigorous empirical research. The following is an overview of the development of both criminal justice programs and the current move to upgrade these offerings.

Criminal Justice Education: A Survey of Current Trends

In the past ten years, many of the nation's colleges and universities have introduced programs in criminal justice education. This movement has focused on present and future practitioners in the criminal justice system: on police officers, corrections officers, court, parole and probation officers, as well as planners and managers in all of these agencies. Where a decade ago only a handful of criminal justice education programs existed in colleges, today these programs number well over 1,000. When most of higher education moved into a posture of steady-state programs and budgets, education for careers in criminal justice showed dramatic annual increases (Annual Report, 1973).[1]

The impetus for this expansion of criminal justice education came largely from the federal government. The several presidential commissions that were organized during the 1960s to consider the problem of crime in the United States concluded that increased professionalism in the police and other agencies was a prerequisite for improved effectiveness of the criminal justice system.[2] The commissions' recommendations were given practical force by a second initiative, the provision of substantial amounts of student financial aid for in-service police and corrections officers through the Law Enforcement Education Program (LEEP).[3] This made it financially possible for thousands of police and corrections officers throughout the country to attend college.[4]

While some institutions with prior experience in this field built on existing foundations of faculty, curricula, and scholarship, others improvised. Where many of these have identified and established promising and innovative curricula, others have developed marginal programs of questionable long-term value. In addition, few, if any, of the newly developed programs have been based on careful research and evaluation.

This problem was clearly articulated by Hoover in his recent monograph, *Police Educational Characteristics and Curricula* (1975). In this work, he identified the following deficiencies of criminal justice education which he found to be especially prevalent at the community college level.

1. The curricula comprise far too many vocationally oriented courses. In some instances these have comprised 50 percent or more of a student's total course work.
2. The quality of the course offerings was frequently deficient, with far too much emphasis placed upon courses that only prepared students to perform specific tasks.
3. A broad theoretical orientation to the entire criminal justice system and process was almost entirely nonexistent. Most programs tended to focus exclusively on only one component of the system.

Given the virtual explosion in criminal justice programs, it is not surprising that such a concern with the quality of these programs has developed and flourished. Indeed, the major national criminal justice organizations mentioned earlier have indicated considerable interest. Their concerns can be divided into two broad areas. One is associated with the credentials of faculty. The other is related to the development of rigorous criteria through which quality control of criminal justice educational programs can be facilitated.

The point which must be emphasized here is that the only mechanism by which change can legitimately be sustained or rejected is through a process of rigorous self-evaluation. In dealing with criminal justice education, two seemingly conflicting goals must be met. On the one hand, the programs must be academically viable and acceptable. On the other hand, courses must be offered which deal in some way with issues and problems facing criminal justice practitioners. In addition, criminal justice is really a *non-system* with each of its component parts existing within its own encapsulated environment and operating where information is both incomplete and uncoordinated (Musheno, 1976).

When we at John Jay College of Criminal Justice began to confront these same multifaceted problems of self-evaluation, we developed and instituted a comprehensive systemic self-appraisal program. Within this have been included an assessment both of the services and facilities of the college and an investigation of all constituency and clientele groups affected by our programs. To facilitate this, we generally followed the approach suggested by professors Coates and Miller (1975). They have suggested that a three-tiered approach be utilized when undertaking evaluative research. This is composed of immediate, short-run, and long-run concerns. When implementing this, we felt that data should be generated in the following areas:

1. The models of criminal justice education (program goals)
2. The value assumptions inherent in each of the models, including such subgoals as types of faculty, relations with the rest of the university, students, and criminal justice agencies
3. Relationship between program goals and program structure
4. Future directions in criminal justice education.

The program developed to accomplish this was comprised of four elements. First, there was an evaluation by students (alumni, undergraduate, and dropouts) of how the program affected their personal growth and career development. Next, faculty and administrators were asked for their perceptions and evaluations of the programs, resources, and facilities of the college. Third, criminal justice agency personnel were requested to evaluate the relevance of the present baccalaureate programs. Finally, the general public was asked to assess the extent to which the college's program was revelant to community needs. Given the systemic nature of this inquiry, it is hoped that it can serve as a model for the self-evaluation of criminal justice programs.

The student element was designed to coordinate the devising, restructuring, and offering of degree programs relating to student's personal growth and career development. On the one hand, an increase in the intellectual and personal maturation of students is sought so that they might be more sensitized and better equipped to understand the problems (personal, agency, societal) with which they must deal. On the other hand, these people must be prepared to assume active and productive roles in either the criminal justice system or some other sector of public service. In accomplishing this goal, promising students from a variety of backgrounds may well be recruited into the criminal justice system making it both more responsive to and reflective of the general public. In addition, such programs not only produce more effective police-corrections-probation officers but they also provide the agencies with a cadre of middle-management and upper-command-level personnel who are capable and well trained for such positions.

With this in mind, the establishment and institutionalization of an ongoing formal relationship with the criminal justice agencies in the New York City metropolitan area was felt to be essential. This was important for a number of reasons. For one, only the agencies are in a position to accurately define their present and future manpower needs as well as to identify those issues which are most important to the field. For another, a constant interchange between John Jay College and the agencies keeps both continuously aware of the activities and concerns of the other. In addition, those in the agencies are kept apprised of any research or curricular innovations which are of concern to them. Finally, such a liaison allows the college to obtain information necessary for the evaluation of its baccalaureate programs.

In addition to this relationship with the agencies, it was felt that John Jay must develop and maintain a good rapport with the general public. This is being done in a variety of ways. One is providing public service forums on selected topics and requesting the participation and support of the public. Another is serving as an information agency for the various segments of the public by providing precise data for such issues as the mandates and limitations of criminal justice agencies.

Finally, it was essential to understand how John Jay's faculty, administrators, alumni, and undergraduate students perceived the present and future needs of criminal justice agencies. In accordance with this, their perceptions and evaluations of the programs, resources, and facilities of the college were systematically and rigorously sought. Such information was necessary in order to gauge how the various constituencies within the college assessed (a) the resources and facilities at their disposal, and (b) the manner and effectiveness with which students were prepared to assume their roles as participants in either the criminal justice system or some other aspect of public service.

Methods

We now turn to the program adopted in pursuing the appraisal as well as the general evaluative design within which the research and development were carried out.

The major purpose of this inquiry is to establish a curriculum which will help to maintain John Jay's highly respected position in the field of criminal justice education. The central question in this regard is which type(s) of offerings will best meet the needs of our students, criminal justice administrators, and the academic field of criminal justice.

At present, there appear to be three general forms of criminal justice curricula (Hoover, 1975; Tenney, 1971). These are: (a) professional-managerial, (b) technical-vocational, and (c) humanistic-social. The first of these stresses management skills needed by senior agency administrators and is generally offered in a business administration context which tends to deemphasize social science and humanities courses.

The second approach tends to emphasize development of competency in the specific skills deemed essential for criminal justice practitioners. Finally, the humanistic-social approach attempts to develop the "whole person" so that he or she might better understand the problems of society and the milieu in which they are prevalent. This sort of program tends to deemphasize the development of specific skills, whether agency or managerially oriented. Since the primary concern of the overall project is curriculum establishment, the central aim of the research phase is to develop the hard data necessary for administrators to ascertain which approach or combination of approaches best fits the future needs of those involved with criminal justice education.

In attempting to achieve this goal, an evaluative process was designed to cover four phases, from clientele and constituency input through program establishment and reevaluation. Throughout the first phase, construction of the research instruments was closely coordinated to allow for precise comparisons of the views of respondents, both within and between groups.

In order to routinize the data collection process, an iterative technique was employed whereby opinions were sought first from the leadership and then from the general populace of each participating group. Once the data had been collected it was prepared for analysis by computer.

In line with this, the initial phase of the research called for contacting and requesting client groups to voice their opinions about the nature of criminal justice education, the present and future needs and directions of criminal justice agencies, or the programs, services, and facilities of John Jay College. The first, and one of the two most important, groups to be contacted in this regard were those associated with criminal justice agencies located in the New York City metropolitan area. All

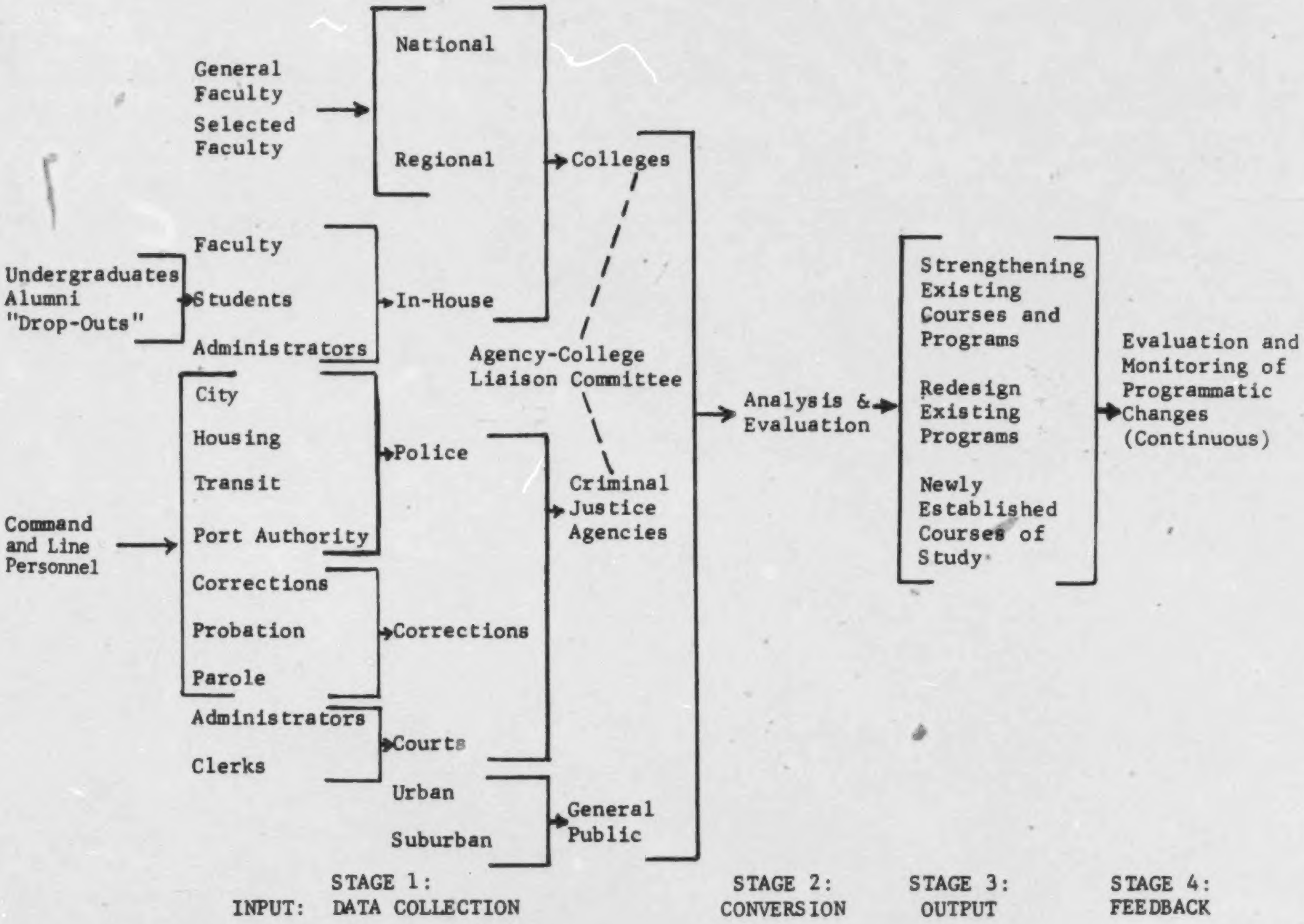


Figure 1. Entire evaluation process.

segments were asked to participate, including the various police departments (New York City, Housing Authority, Transit Authority, and Port Authority), corrections departments (Corrections, Probation, and Parole), and the courts. Initially, command personnel were interviewed at considerable length with regard to their views of education generally, criminal justice education specifically, and training as it affects their personnel. The discussions ranged from broad overviews of the topics to extremely specific references to courses or training procedures which respondents wished to have emphasized for those in their employ. The purposes of these inquiries were multiple and included: (a) ascertaining information about the managerial skills and concepts adjudged essential for criminal justice administrative personnel, (b) acquiring information about specific course offerings, both needed and desired, and (c) establishing John Jay as a resource center for the agencies.

The general personnel of these agencies were then surveyed by means of structures questionnaires, which were distributed in proportion to the number of individuals at each rank. The opinions elicited concerned perceptions of their departments' training and educational needs. It is from these responses of both command and line personnel that perceptions of the present and future needs of criminal justice agencies will be determined.

The second of the major groups to be contacted were those connected with the college. Thus, students (undergraduates, alumni, and dropouts), faculty, and administrators were asked to express their opinions concerning the nature of the needs of criminal justice agencies, criminal justice education generally, and John Jay's programs specifically. While the survey instruments for each of these were closely coordinated, a slightly different focus was established for each group.

The questionnaire administered to faculty and administrators dealt with a variety of issues. Among these were items concerning the following:

1. The nature, background, and role of the faculty members within the discipline
2. The relationships existing between criminal justice agencies and criminal justice educators
3. The objective of faculty members with regard to students and their careeers
4. The philosophies of criminal justice education which are held and implemented by the respondents
5. Programmatic concerns
6. Demographic data
7. The nature and quality of John Jay's services and facilities.

The segment addressed to administrators and senior faculty members was broadly worded and open-ended, while the segment submitted to the general faculty was far more explicit in its presentation. The questionnaire designed for the student components also followed this latter explicit style. Because students' concerns differed from those of the faculty and administration, the focus for this element was shifted somewhat to include such issues as:

1. Why they initially entered John Jay
2. Why they remained/withdrew
3. Evaluation of the resources and facilities
4. Quality of the general curricula
5. Quality of the criminal justice curricula.

The coordination of these survey instruments with those used for general faculty and agency personnel is allowing analysts to determine the consonance, dissonance, and relative accuracy of the respective views.

Next, the general public has been contacted. At this point, both urban and suburban residents are being surveyed so that the extent and accuracy of their knowledge about the criminal justice system and its practitioners, as well as their views toward criminal justice education, may be ascertained.

A fourth group to be interviewed were faculty members and administrators of selected criminal justice programs as well as the general professoriate of this field throughout the United States. Once again, the two-tiered technique discussed earlier was used. In the first stage, the leaders in the field were visited on their home campuses and interviewed extensively according to an open-ended interview schedule. On the basis of the data gathered during these visits, a structured questionnaire was created and distributed to criminal justice educators generally. These were the same instruments to which members of the John Jay faculty were replying. Therefore, another situation has been presented in which the perceptions of those associated with John Jay can be compared with individuals situated at other institutions.

Once these investigations have been completed, a vast amount of information will have been gathered. This will range from the general overviews offered by agency and academic leadership to the specifics presented by criminal justice practitioners, professors, students, and the general public.

This information will provide the necessary data for those at John Jay to determine whether or not their programs are meeting the educational goals. The data also should provide a pathway for appropriate curriculum change.

Footnotes

[1] This is clearly seen by the growth between 1965 and 1973. In the former, only about 100 programs were reported to be in operation, while in the latter, the number had increased to over 1,000.

[2] Among these, two were particularly outstanding: the National Advisory Commission on Criminal Justice Standards and Goals, 1973; and the President's Commission on Law Enforcement and Administration of Justice, 1967.

[3] This was enacted by virtue of the *Omnibus Crime Control and Safe Streets Act of 1968*, Public Law 90-351.

[4] As of 1973, some 95,000 students were using LEEP funds. See *Annual Report of the Law Enforcement Assistance Administration*, 1973.

References

Coates, R.B. & Miller, A.D. Evaluating large scale social service systems in changing environments: The case of correctional agencies. *Journal of Research in Crime and Delinquency*, 1975, *12*, 92–106.

Hoover, L.T. *Police educational characteristics and curricula.* Washington, D.C.: National Institute of Law Enforcement and Criminal Justice, U.S. Government Printing Office, 1975.

Musheno, M., Palumbo, D. & Levine, J. Evaluating alternatives in criminal justice: A policy-impact model. *Crime and Delinquency*, 1976, *22*, 265–283.

Suchman, E.A. Action for what? A critique of evaluative research. In R. O'Toole (Ed.), *The organization, management, and tactics of social research.* Cambridge, Mass: Schenkman Publishing Co., Inc, 1971.

Tenney, C.W. Jr. *Higher education programs in law enforcement and criminal justice.* Washington, D.C.: National Institute of Law Enforcement and Criminal Justice, U.S. Government Printing Office, 1971.

U.S. Department of Justice. *Annual report of the Law Enforcement Assistance Administration.* Washington, D.C.: U.S. Government Printing Office, 1973.

THE OUTCOMES OF HIGHER EDUCATION: TO MEASURE OR NOT TO MEASURE

Ben Lawrence
National Center for Higher Education Management Systems

The measurement of the outcomes of higher education is a philosophical as well as a practical issue. Certainly it is necessary to measure impacts of higher education, even if some embarrassments result. If higher education is, in fact, doing less than an adequate job with the sources it is granted, the first step toward impelling and motivating and facilitating improvement is to document the shortcomings. And there will be shortcomings. But if the ability is acquired to measure comprehensively the wide range of the outcomes of higher education, the shortcomings will be overwhelmed by the documentation of an array of benefits of every sort which now, in varying degrees, go unacknowledged.

Yet, what ought to be done and what can be done are different matters. And it is the latter question, the feasibility of measuring a meaningfully broad range of the outcomes of higher education, that may be more timely, and even urgent, because the notion of outcomes measurement is rapidly gaining favor with institutions. Outcomes are suddenly quite the fashion, as the National Center for Higher Education Management Systems (NCHEMS) discovered recently when it launched a new outcomes assessment workshop with the Educational Testing Service (ETS). In short order, the workshop was overbooked, and NCHEMS is now considering whether to extend the series and accommodate a long waiting list of would-be participants.

This new interest in outcomes has spurred R&D efforts—by ETS, by NCHEMS, by the American College Testing Program (ACT), and others. And so it is a good time to remember that renewed interest and redoubled effort will not in themselves guarantee success. Success is commonly assumed to be a function of effort—if resources are plentiful enough, any problem can be solved. But efforts to analyze the impacts of college education date back 40 years or more, and the art is still in a very primitive state. Kenneth Feldman (1970) wrote, in an ACT research report, " . . . it is certainly true that our knowledge is not very great, given the immense amount of effort that has been exerted in research, analysis, and discussion of college effects." (p. 1) Our ability to measure outcomes now is, substantially, no greater than it was in 1970, though not for the lack of trying.

There has been a growing interest, then, in identifying and measuring the outcomes of higher education—and a record of slow and spotty progress. The new impetus toward the measurement of outcomes is easy enough to understand. It is a direct outgrowth of the rising awareness that higher education must be more accountable and credible because resources are being ever more closely linked to accountability—and clearly are going to stay linked. But the assumption that measuring outcomes is the best and most direct way to become more accountable is largely an unexamined proposition. It is, however, one that needs to be examined. We should look both at what constitutes accountability in higher education and what constitutes valid measures of outcomes in higher education. The concept of outcomes has many dimensions, of course, but five seem to be of predominate concern today.

First, there is the concern for efficiency—the conviction that higher education should perform its functions at the least possible cost.

Second is the matter of effectiveness—the responsibility of higher education to do its job well, to produce outcomes appropriate to need and expectation and of good quality.

Third, accountability requires evidence of productivity—evidence that higher education produces both a quantity and a quality of benefits whose value equals or exceeds the value of the resources used in producing them.

Fourth, higher education is expected to be a good investment, in the sense that dollars expended should yield returns that are more highly valued than would be the returns from making the same investment in another social enterprise.

And fifth, accountability demands that higher education demonstrate its social responsibility. In producing valued outcomes, higher education is expected to perform according to prevailing notions of justice, equity, and fairness. These process characteristics are, in effect, desired and demanded service. For higher education to be socially responsible is to achieve a kind of outcome—a means that is an end in itself. And, to an extent, other ends must be tempered by the means—by the need to achieve and maintain process characteristics that are socially responsible.

There are other dimensions and factors that help complicate accountability. But these five make it immediately apparent that the whole business of accountability is largely subjective. Effectiveness, good investment, social responsibility—all these demand value judgments. And the special nature of higher education further complicates the problem of accountability. Three general characteristics need to be considered.

First, higher education is like a factory to the extent that it is expected to produce tangible things. It must turn out holders of degrees or certificates who have acquired varying levels and qualities of knowledge or competence, as well as research findings and various services. Most colleges and universities primarily produce graduates or program completers. But, unlike a factory, a college does not have close control over its raw material—that is, its students. Students are at the same time workers and raw material. In good measure, they shape and reshape themselves, utilizing the environment and facilities of the campus. The institution's role in the teaching-learning process is certainly not passive. But the institution cannot shape the student into a competent degree holder unless the student has, and exercises, the requisite ability. In a factory, the machines do not care what they do and the raw material cares less what happens to it. In higher education, raw material must be a willing and active participant in the process if something of value is to be produced.

The second complicating characteristic of higher education is that its institutions must not only *do* but *be*. Like a park or a public auditorium, an institution provides a setting conducive to a desired experience. The quality of setting has much to do with the quality of education outcomes. A quality academic setting can be expensive to build and to maintain.

Finally, higher education has the uncommon characteristic that it is, for the most part, supported by taxpayers whose elected representatives have expectations of higher education that are different, sometimes radically different, from the expectations of the direct users of higher education. In the legislative mind, questions of cost and social responsibility are uppermost. The first concerns of most students are program diversity and quality. Those who make use of university research and other services are similarly interested in diversity and quality.

Other factors enter the picture, of course. But even if consideration is confined to the four dimensions of accountability and the three special characteristics of higher education discussed above, it must be recognized that accountability involves immense complexities and demands difficult trade-off decisions.

As between efficiency and effectiveness, the trade-offs are fairly straightforward, in principle at least. Producing something cheaply is not a virtue if efficiency is achieved at the cost of utility and durability. On the other hand, making a product useful and durable does not guarantee that the intended user will be able to afford it.

Effectiveness also may have to be traded off in the name of social responsibility. An institution may be expected to provide access and special programs for relatively less capable students. But student ability is a substantial component in program effectiveness and efficiency as well. Social responsibility may mean spending more to produce less.

Suppose, however, that when those trade-offs have been made, an institution is still able to demonstrate that it is operating with reasonable efficiency and effectiveness. This does not make it necessarily and automatically a good investment for public dollars, because the money might bring a higher return if invested in some other social enterprise.

Moreover, how does one justify investment in the institutional environment—in the creation and maintenance of those park-like qualities noted above? How does one demonstrate the contribution that such qualities make to efficiency, effectiveness, and investment return?

How confounding the accountability requirement can be when all those trade-offs involving efficiency, effectiveness, social responsibility, and return on investment are taken into account. Can one reasonably expect that the identification and measurement of the outcomes of higher education can be improved and extended sufficiently to be of real use in the accountability process? Will such advances be cost effective? For, if anything has been learned, it is that collecting outcomes information is expensive. Driving up administrative costs is hardly the way to improve an institution's efficiency rating. In any case, as an R&D undertaking, outcomes is unquestionably lodged in the high-risk category.

Granting that risk of failure is high and the list of seeming imponderables in the outcomes area is long, one must consider the risks and the costs of not advancing the state of the art and applying whatever outcomes measures can be developed.

The first and worst risk is that the purely numerical, efficiency-biased perspective will continue to predominate and probably increase its domination of the accountability arena. Throughout higher education, the student credit hour is denounced as an invalid measure of efficiency or effectiveness. Harold Hodgkinson said it best—"no one has ever felt, smelled, or heard, or seen a credit hour. A credit hour is simply a measure of time spent in a place of instruction in the presence of some instructional medium" (1976, p. 41). Dr. Hodgkinson is exactly right. Student/faculty ratios are, in and of themselves, equally useless indicators of productivity. All such formulations, no matter how precisely calculated, are essentially manifestations of unit-cost economics. Unit cost is an ideal productivity indicator in industry, because it is applied in the light of other known quantities. A factory knows with great precision what it is producing. The unit of production is precisely defined; its uses and quality are known; and its market value is easily determined. But, so long as one does not know what a student credit hour represents or what its content is, one cannot know what it is worth and, therefore, cannot know whether the cost of producing it is too high.

Yet this bottom-line economic perspective, which any fair-minded analysis exposes as a faulty conception if applied to higher education, is at present the most commonly used accountability indicator. In the long run, this kind of accountability will lead higher education away from many of its true responsibilities and, eventually, into trouble with its constituencies, the public at large, and its own conscience. Accountability dominated by that perspective summarily dismisses the value of environmental factors and the value of institutional efforts aimed at discharging social responsibilities. The use of such measures of efficiency is a way of shortchanging not only higher education but all of society. If society is not to be shortchanged, these simplistic and distorting unit-cost measures must be supplanted by a wider variety of more appropriate outcome measures. So, unless one has forbidding evidence that the development of outcomes measures and indicators is patently not feasible, there is a clear social imperative to proceed. And there are many signs that the climate has never been better for such efforts. The growing sense of need for better outcomes measures certainly can be made to harden into commitment. How then to proceed?

Howard Bowen (1974) has put forward four steps by which institutions can attain true accountability. They constitute a sound approach, provided that a fifth step is added. Dr. Bowen's four points are these:

1. Define institutional goals and order their priorities.
2. Identify and measure the outcomes of institutional programs.
3. Compare the goals and outcomes and then judge the degree to which the goals are being achieved.
4. Measure the cost and judge the degree to which it approaches a reasonable minimum.

The fifth step that should be taken is to determine whether the outcomes produced are a better buy than other outcomes that the public might purchase with the same dollar. In the late fifties and sixties—those years of plenty that can be recalled with such nostalgia—questions were raised from time to time about the pell-mell growth of higher education and its cost. These objections were usually not motivated by a desire to make alternative use of the sources involved, however, and perhaps that is why they did not prevail. But today, the competition for public resources is real and severe, and it will continue to be so, even with the return of economic good times.

A legislator may concede that a college or university is operating efficiently, effectively, and in a socially responsible manner. He or she may have a sincere sense of the value of the institution's educational programs and may wish to see their benefits made more widely available. But he or she must ask whether constituents do not value and need an alternative benefit, such as improved or extended health care, even more than good higher education. If it is to compete effectively for resources, higher education must be able to demonstrate that its outcomes are better and more valuable than those that might be obtained with the same investment elsewhere.

Hard to do? Of course. And impossible to do unless the concept of the outcomes of higher education is broadened far beyond the bottom-line notion that is so pervasive today. The search for outcomes measures must be cast in a framework that more adequately represents the total responsibility of institutions. And, though this can be done, it is not merely a matter of defining more outcome measures and developing techniques for collecting the relevant information.

Future work on outcomes should accommodate several considerations. For one thing, one must make a clear, conceptual differentiation between indicators of outcomes and indicators of quality—that is, between impacts per se, on the one hand, and the quality of those impacts and of the process that generates them on the other hand. Developing and maintaining an environment conducive to a high level of learning and intellectual development is not an end in itself. For the purposes of accountability, the cost of a quality institutional environment is justifiable only to the extent that it can be shown to improve institutional outcomes. Indicators of quality are needed that apply to components in the education process—faculty, students, curricula, and physical resources. But also needed are other quality indicators that apply to instructional outcomes, research outcomes, and community-service outcomes—and one should not confuse process quality and outcomes quality.

Moreover, outcomes measures cannot be viewed in isolation. The development of useful measures or indicators must take into account their intended analytical use. An institution has an array of outcomes whose interrelations must be understood and whose relations to indicators of process quality must also be understood.

The general purpose, accountability, involves not only the ability of higher education to demonstrate that it makes justified use of its resources: it also implies a willingness on the part of higher education to correct deficiences and improve performance, where possible. To do that, one must understand relationships—such as the effect that the use or non-use of teaching assistants in universities has on the cost and quality of graduate education. The validity of such indicators must be demonstrated and made a matter of common agreement, not only within higher education but between higher education and what can be called the accountability audience, with its mix of conflicting perspectives. These must be kept in mind when calculating the trade-offs between the differing dimensions of the accountability requirement.

Despite the difficulties inherent in outcomes measurement, there is one concrete reason for optimism. It is found in a study recently completed by one of NCHEMS' senior researchers, Leonard Romney, who surveyed more than 1,100 faculty, trustees, and administrators at 45 different colleges and universities to determine their views about their institutions' goals and appropriate measures of progress toward those goals. In essence, the study shows that within institutions, trustees, administrators, and faculty are pretty much in agreement regarding what the institution's goals should be. They also agree fairly well on what measures would be appropriate for measuring goal progress. A third finding, which is equally significant, was that most trustees, administrators, and faculty are skeptical about the validity of the productivity measures in common use at present.

This study indicates that within higher education, at least, there is a climate of awareness for the need for better outcomes measures—and that a consensus in higher education, on both objectives and measures, may be much easier to reach than one might have thought. Nothing conduces more to success than the ability to present a common front to difficulties.

At the same time, one has to deal with the fact that little knowledge exists about the different values that various beneficiaries of higher education would attach to the objectives upon which those in higher education might agree. One must find out what weight is given to specified objectives by the different groups to whom higher education must be accountable.

That leads to a consideration of fundamental importance, a consideration that is most difficult to deal with. The advantage in deciding with some precision what are the objectives of higher education is obvious enough: then one would know precisely what he or she wants to measure. The standard PPBS approach to management would have an enterprise specify its objectives in measurable terms—a tactic that makes excellent sense in settings where objectives can be agreed upon easily. Measuring progress toward such commonly accepted objectives is likely to be a straightforward process. And, accountability would be simply a matter of demonstrating that the objectives had been achieved, effectively and efficiently.

However, that view of planning and accountability in higher education must be challenged. It may be that, within higher education, a widespread common understanding of objectives can be achieved. But it would be a very difficult task, indeed, to extend this commonality of outlook and expectation to all interested parties in a democratic society. Even if this could be done, there is great danger for higher education in reaching prior agreements with the accountability audience on a preclusive set of outcomes as a basis for assessing efficiency and effectiveness.

Higher education must never be harnessed to, or hobbled by, a proscriptive set of intended outcomes. Program planning should provide leeway resources and opportunities that are not specifically justified in terms of precisely defined outcomes. The value has been learned of basic research consciously aimed at little more than satisfying the researcher's curiousity: that the unanticipated by-product of basic research may be worth far more than the intended product. The unintended outcome may be of modest value, like teflon, or of immeasurable human benefit, like penicillin, or of awesome impact and ambiguous value, like the atomic bomb and all of its frightening progeny. The contribution of higher education to basic scientific research is well documented. It also has been discovered that there is a relationship between the volume of basic research and the quantity and quality of its unintended outcomes.

There is little, if any, awareness, however, of the extent to which the liberal arts produce unintended or unspecified outcomes from which unanticipated benefits are reaped. One result is that the liberal arts are faring very poorly in the accountability arena today. The tendency is to narrowly justify college education in terms of induced career benefits. Accordingly, such disciplines as philosophy, literature, and history are said to have only a nebulous claim to resources for serving student majors because their only relevant employment would be in teaching, where there are no jobs. Similarly, an engineering program or a business school tends to be evaluated on the basis of how well graduates do in their fields of preparation. Should the graduate give up engineering, or business, after a few years, some fault in his preparation is inferred. What ought to be done is to find out why people shift to new occupations, how well they do in them, and to what extent some unplanned educational outcome influenced the shift. Should one fault the U.S. Naval Academy because one of its graduates, trained for submarine duty, went into the peanut business and, subsequently, exhibiting still more irresolution, got into politics?

Outcomes oriented planning for higher education must not lead to the attenuation of the range of benefits that, in fact, emanate from higher education. Perhaps accountability should be addressed through outcomes-oriented assessment, which measures outcomes after they are produced rather than prescribing them in a limited fashion beforehand. Colleges and universities must keep doing those things that result in graduate engineers rising to the presidency of the United States—and there have been two instances of that, by the way. Fuller accountability requires that ways be developed of measuring unintended outcomes, as a first step to relating them to the process characteristics in higher education that brought them about.

To these can be added many other hurdles that impede progress toward the goal of full accountability, which is the proper goal for outcomes research and development. Accountability is, at heart, a matter of critical assessment. An observation in Alexander Pope's *Essay On Criticism* is apropos, even though it may be viewed in some quarters as chauvinistic. The poet notes that when one estimates the attractions of a lovely woman,

> Tis not a lip, or eye, we beauty call,
> But the joint force and full result of all.

References

Bowen, H.R. The products of higher education. In Evaluating Institutions for Accountability, *New Directions for Institutional Research* (H.R. Bowen, Ed.). San Francisco: Jossey-Bass, 1974, *1*, pp 1-21.

Feldman, K.A. *Research strategies in studying college impact.* ACT Research Report No. 34. Iowa City, Iowa: American College Testing Program, 1970.

Hodgkinson, H.L. Planning and management in the face of the changing demographic picture. In *Information and analysis in the context of institutional-state relationships: The tie that divides us.* (W. Johnston, Ed.). Proceedings of the NCHEMS 1976 National Assembly. Boulder, Colo.: National Center for Higher Education Management Systems, 1976.

PROGRAM EVALUATION CONDUCTED THROUGH AN OFFICE OF INSTITUTIONAL RESEARCH: AN APPROACH, SOME RESULTS, AND MANY IMPLICATIONS

Barry Greenberg
Florida International University

This investigation was initiated in the fall of 1973 at the request of the vice president for academic affairs who authorized the Office of Institutional Research to conduct a program evaluation within selected academic units. In retrospect, while the vice president was motivated by an upcoming requirement for a self-study, in the Office of Institutional Research the interest extended to designing an approach which could be utilized for program improvement on a continuous basis.

Following the vice president's directive, the literature was purused and, in consultation with the academic deans, the following objectives were agreed upon:

1. To orient decision-making administrators to the advantages of the early development and continued use of the program evaluation process
2. To select from the available literature an approach to evaluation which appeared to enhance program growth and development
3. To implement the evaluation model in a limited setting while carefully monitoring its impact
4. To make necessary modifications in the model and then utilize it in a larger setting
5. To utilize the process university-wide for self-study purposes.

Subsequent literature searches related to the outcomes of program evaluation were quite frustrating. It proved difficult to obtain descriptions of what actually happens in program evaluations, what is useful in the various models, and what is not. So, this investigation was initiated with only a limited understanding of what to expect.

The purposes of this paper, therefore, include developing some potential for later replication as well as communicating the experiences of one institution with a particular program evaluation model.

Methodology

Following the development of objectives, strategies of methodology evaluation were more fully explored. The work of Popham (1975) provides a useful scheme for their categorization as follows:

1. Goal attainment models
2. Judgmental models emphasizing intrinsic criteria
3. Judgmental models emphasizing extrinsic criteria
4. Decision-facilitation models.

Popham identifies Ralph Tyler as the principal sponsor of the goal attainment model wherein specific program goals are identified and translated into measurable objectives, after which pupils are tested to determine how well each objective has been attained. A program is evaluated, then, on the basis of how many of its objectives have been attained. This is, of course, the approach utilized for the current National Assessment of Educational Progress.

Judgmental models emphasizing intrinsic or extrinsic criteria are categorized by their focus on the role of professional judgment. The most commonly utilized illustration of the intrinsic variety of the judgmental model is the accreditation process wherein specialists from outside the school examine factors associated with the process of education with little or no attention being paid to the products of education. Thus, visiting teams count books in the library, faculty with Ph.D.'s, and the number of elevators per student.

Judgmental models emphasizing extrinsic criteria, generally associated with the writings of Michael Scriven (1967) and Robert Stake (1967) place responsibility on the shoulders of the evaluator for, among other items:

1. Distinguishing among formative and summative evaluation needs
2. Assessing the quality of program objectives
3. Designing means of comparing effects of different programs.

Throughout the above, attention is paid to the product in addition to, or often instead of, process.

The fourth class of evaluation models, dubbed decision-facilitation by Popham, came close to matching the objectives developed for this project. Most advanced by Dan Stufflebeam et al. (1971) and by the University of California at Los Angeles Center for the Study of Evaluation (CSE), formally directed by Marvin Alkin (1969), these models stress, most fundamentally, the role of evaluation in enhancing the decision-making process. Essentially, they provide a methodology which both aids in raising fundamental questions which need to be asked and provides guidelines for resolving them. In fact, the decision-facilitation process uses elements of all three approaches previously discussed. The adaptation of the Stufflebeam approach and of the Center for the Study of Evaluation approach, which was utilized in this study, contained four stages as follows:

Stage 1: Needs Assessment—In which the objectives for the program being evaluated are placed in the context of community needs.

Questions of concern include: Are there other programs like this one available to your clientele; which objectives are these other programs meeting; which objectives are not being met by any other programs; how may these objectives be prioritized in light of community needs; are we left with a set of objectives which fit with the total college or university?

Stage 2: Program planning—In which the particular courses being offered are examined to see their relationship to progam objectives.

Questions of concern include: How have other programs differed from this one in the array of courses, institutes, training programs, etc., they have mounted to meet similar objectives; what evidence is there that this particular array of courses is more likely to reach program objectives than any other arrangement; are cost factors relevant?

Stage 3: Program implementation—In which difficulties encountered in the installation of any program component are identified (such as budgetary limitations, space limitations, etc.)

Questions of concern include: Has failure to reach objectives (which is the concern of Stage 4) been due to a failure to properly implement key components of the prog ɱn rather than a failure of the program itself; can any mid-course corrections be made to increase the likelihood that the program will be properly installed; do we have a program plan which simply cannot be implemented?

Stage 4: Outcome assessment—In which it is determined whether program objectives are being attained.

Questions of concern include: Which objectives are being attained to the satisfaction of planners, of learners; which objectives are not being attained; how does this relate to the needs assessment; are changes needed in program planning or program implementation?

With this strategy decided upon, meetings were conducted with administration and faculty of the School of Health and Social Services and the School of Hotel, Food, and Travel, the two units selected for the pilot phase of the study. The purpose of these sessions was to attempt to explain the decision-facilitation model.

Implementation

The four-stage evaluation began with a needs assessment for each program within the units. In this phase, interviews were conducted with the program developers, and all literature related to the development of the program was read for the purpose of learning the particular needs the program was established to meet. One outcome expected from this effort, in addition to providing the foundation for later stages, was an appreciation on the part of the program planner of the changing nature of needs and the desirability of staying up-to-date relative to those changes. At the very least, it required planners to be aware of the rationale for the establishment of their programs.

In the second phase, program planning, the rationale for the particular array of courses offered to students was explored in relationship to the needs the program was designed to meet and to other methodologies which could have been selected. An outcome hoped for was the development of a plan to enable cost/benefit comparisons to be conducted across the various methodologies.

In the third phase, program implementation, the mechanics of the operating program were examined to identify discrepancies between the program plan and reality. This phase is of particular importance in situations where failure to obtain objectives reflects a failure to properly install a program rather than a failure of the plan itself. This phase assisted the planners in developing methods of "flagging" problems before they were likely to have too significant an impact.

Fourth, there was outcome assessment, in which data were collected from students participating in the program in order to obtain an indication of whether they felt the program's objectives were being attained. This information related directly back to the needs assessment phase where specific target objectives were identified.

The methodology chosen for outcome assessment was a telephone survey of graduates, using specially trained interviewers. It was felt that this would significantly improve response rates.

Results

As to the results of this undertaking, it is important to point out, first and foremost, that there is now a climate for evaluation, a receptivity to what it can accomplish. The same chairpeople who attempted to sabotage the process through long delays, and seemingly endless requests for rewrites, now turn to the Institutional Research Office when an outside source asks them for follow-up data on their graduates. It is recommended that the best way to prove one's objectivity and sincerity when those come into question, and certainly these experiences suggest they will, is to conduct one phase at a time, demonstrating a professional approach to all activities and, in particular, to the manner in which information relating to programs is treated. Evaluations are as much a part of the political process as they are of the research process, and evaluators need tough skins as well as valid instruments.

Secondly, after overcoming all of the above, results suggest that it is possible for data from an objective evaluation to impact a program. The data showed program weaknesses where planners didn't know there were weaknesses. The data even showed some strengths which hadn't been boasted about previously, and revealed employment rates, salaries, and new needs which graduates had themselves only recently identified.

A third conclusion relates to the other aspects of the model. The results suggest that needs assessments are probably the most difficult (and least rewarding) undertakings for ongoing programs. Ideally, the time to begin them is before a program is instituted so that the practice of gauging needs is built into the program design. In order to insure that ongoing programs will engage in continuous needs assessment, it is necessary for the office doing the evaluation to supply those programs with simplified checklists and many guides to indicate where and how this kind of data may be obtained.

Program heads are simply not oriented toward collecting and examining needs-assessment-type data. The same is true of the program planning phase. Unless, and until, that point is reached when chief administrators require justification for the continuation of a given array of courses (and maybe that point is coming), there is little likelihood of program heads giving serious consideration to alternative sequences and methodologies. Program implementation results have been most informative and most useful. Program heads are accustomed to gathering this kind of information, albeit haphazardly, but rarely is anything much done with this kind of data. Now, with its systematic retrieval and analysis encouraged, program heads are better able to summarize their problems and needs.

In conclusion, it is apparent that definite progress has been made toward accomplishing the objectives originally developed for this effort, and there is some reason to be optimistic. Clearly, it has been demonstrated that program evaluation costs are very worthwhile. Just as clearly, however, there is evidence that continued efforts are required before the model will be fully "institutionalized"—when year-end reports prepared by program heads routinely include analyses of data relating to needs assessment, program planning, program implementation, and outcome assessment. The results of this investigation suggest that the following recommendations can help to bring this about:

1. Three of the steps of the model, needs assessment, program planning, and program implementation, should be the responsibility of the individual units after they have received an orientation to the purposes and methodology appropriate for each. Checklists and written illustrations should be provided to assist in the task. (There will need to be careful consideration given to the creation of an incentive to encourage units to cooperate.) Completed checklists should be made available to the Office of Institutional Research or any other office designated overall reponsibility.

2. Outcome assessment based upon specific program objectives, if available, and upon general objectives if specifics are not available, should continue to be the responsibility of the Office of Institutional Research.

3. The office responsible for program evaluation should present semi-annual reports directly to the academic units. These reports should offer specific suggestions to program

heads regarding their offerings and should offer recommendations regarding future use of the evaluation model.

4. The question of the flow of evaluation reports after they leave the program areas should be resolved and made explicit. It is clear that various academic administrators have legitimate uses for all evaluation data. The literature suggests, however, that an evaluation, such as this one, designed for program improvement, may lose the cooperation of those involved if it is perceived that the data may be used for other purposes. One way to lessen the likelihood of this occurring is to arrange for all reports to be within the control of the individual academic units. Accordingly, it is recommended that the semi-annual evaluation reports remain with program heads and that, once a year, program heads be required to present their own summaries of the evaluation results to the appropriate academic administrators. Thus, in this procedure, the role of the office responsible for program evaluation would cease its presentation to the academic units.

A final recommendation is directed toward evaluation professionals themselves. Namely, as their activities increase in intensity, useful strategies will emerge which could be of benefit to their colleagues around the country. The time has come to share these experiences, both pleasant and not so pleasant, so that the literature may contain workable theories as well as sets of assumptions about how to do program evaluation. To do otherwise is to invite repetitions of the hard-luck sagas so many have faced. Evaluation is difficult enough to do when armed with good tools; without them it is virtually impossible.

References

Alkin, M.C. Evaluation theory development. *Evaluation Comment*, 1969, *2* (1), 2–7.

Popham, W.J. *Educational evaluation*. Englewood Cliffs, N.J.: Prentice-Hall, 1975.

Scriven, M. The methodology of evaluation. In R.E. Stake (Ed.), *Curriculum evaluation* (American Educational Research Association Monograph Series on Evaluation, No. 1). Chicago: Rand McNally, 1967.

Stake, R.E. The countenance of educational evaluation. *Teachers College Record*, 1967, *68*, pp. 523–540.

Stufflebeam, D.L., et al. *Educational evaluation and decision-making in education*. Itasca, Ill.: Peacock, 1971.

EVALUATION OF COMMUNITY COLLEGE ADMINISTRATORS

Phil Shragge
Grant MacEwan Community College, Alberta

Background

The topic of staff evaluation in Grant MacEwan Community College[1] is, I suspect, not much different from most other postsecondary educational institutions. Described briefly, faculty are highly resistant to any formal college-wide evaluation for the usual reasons described in the growing collection of literature. Administrators, as faculty are quick to point out, tend to press for the implementation of a faculty evaluation while they themselves avoid any consistent form of performance appraisal.

In 1975, my office was approached by an administrator who asked that we conduct a formal evaluation of his performance. This request provided us with the opportunity of developing and testing an administrative evaluation design which subsequently was carried out by twenty-one senior- and middle-level administrators. The discussion which follows describes the design, implementation, analysis, and follow-up procedures used in their evaluations.

Purpose of the Evaluation

As Scriven (1967) points out, many of the suspicions and misunderstandings of evaluation stem from a misinterpretation or lack of explication regarding the difference between the *role* and the *goal* of evaluation. The goal is always consistent: to estimate the merit, worth, or value of whatever is being evaluated. The role (or purpose as it may be called) of evaluation can vary a great deal. In performance evaluation, the information can be used by the evaluatee purely for self-development or, on the other end of the continuum, can be used to determine whether a person should be retained in his or her present capacity. The role of evaluation can serve many different purposes. It is, however, important that participants understand and support the purposes of the evaluation. Since our evaluation procedure was admittedly experimental and because of the threat factor (which will be discussed later in more detail), it was decided that participants would determine at the onset of the exercise what would be the role or purpose of their own evaluations. Only if the participants agreed would the evaluation be shown to their supervisors or anyone else. In fact, all those who took part, except the administrator who originally requested the evaluation, chose to use the information only for self-development purposes although many circulated their evaluation report among their staff.

Philosophy

Any evaluation design is based on a set of assumptions which, themselves, rest on a particular philosphical point of view. In order to better understand the evaluation design discussed in this paper, the philosophical underpinnings and the postulates which are deduced from them can be stated as follows.

Regardless of whether one does or does not believe that there should be evaluations of individual performances, all people are judged or rated. This is done, explicitly or implicitly, by individuals on themselves as well as by other persons, groups, or organizations who come in contact with, or are affected by, their particular performances. The standards or norms on which such judgments are made vary from individual to individual and from group to group, as does the quantity and quality of information on which the judgments are ultimately based and on which subsequent actions are taken.

Since it is generally acknowledged that good decisions are a function of the quantity and quality of available information and since so many performances are judged on the basis of incomplete and subjective information, it seems logical that everyone should support attempts to broaden and make more objective the information base upon which decisions are made.

Basic Assumptions

A number of basic assumptions are made:

1. The quality and utility of an evaluation is directly related to the amount of objective, relevant information available to the evaluators.
2. Evaluation of administrators should be based on information relating to the achievement of specific objectives through the performance of specifically delineated functions or activities.
3. For each position, the functions or activities being performed are not of equal importance and must therefore be ordered according to their relative significance in the overall context of the position.
4. Information regarding the performance of each function or activity should come from those sources most capable of providing firsthand observations of the evaluatees or their work.
5. Each information source is not of equal importance and must therefore be ordered in relationship to the overall quantity and quality of available information.
6. The relative weighting of each information source must take into consideration the amount of contact that has been made with the evaluatees or their work.
7. Effective evaluation must take place in an atmosphere of cooperation and trust between the evaluators and those being evaluated.

Phases of Evaluation

The evaluation at Grant MacEwan Community College was broken into three phases: the preevaluation phase, the evaluation process itself, and the postevaluation processes.

Phase 1. Preevaluation: Goals and procedures

Goal 1: To create an atmosphere of cooperation and trust between those being evaluated and the evaluators.

Procedures:

(a) Evaluatees were provided with as much information about the evaluation as possible prior to the commencement of the activity. By outlining the assumptions underlying the evaluation, the purpose of the exercise, the procedures, and finally the opportunities for self-development, much of the mystique of evaluation was dissipated and with it the threat. Explanations of the evaluation were provided to each participant in writing and were followed by discussions in order to further clarify the assumptions and methodology. A pre- and posttest showed that the group as a whole felt more comfortable and supportive after this process than at the outset.

(b) As stated previously, participants were allowed to decide the purpose for which their individual evaluations would be used. By allowing the risks and consequences of evaluation to be set by each person, the threatening nature of the process was further reduced.

(c) Despite the fact that only one participant chose to provide his supervisor with the evaluation information, a grievance procedure was established so that there would be a clearly delineated means of appealing decisions made on the basis of such information.

(d) Once the evaluation information was compiled and analyzed, all raw data were destroyed so that no one could have access to the responses.

(e) Follow-up procedures for staff development were clearly stated. If the purpose of the evaluation was to identify areas of administrative performance which required improvement, the institution should state explicitly the kinds of developmental activities it would consider suitable and the degree to which these would be supported.

Goal 2: To identify and define as explicitly as possible the objectives of each administrative position and the functions or activities through which such objectives could be achieved.

Typically, most job descriptions are both ambiguous and incomplete. There is a tendency to ascribe similar objectives to various positions without delineating the functions or activities by which these objectives can be met. In addition, since job descriptions are usually at least several years old, they may include functions which are no longer performed and omit others which have been implicitly made part of the position.

Procedures: The evaluator met with each administrator and carefully developed a job description which outlined the administrative position's responsibilities and general objectives. The behaviorally defined functions were then identified which, in total, had to be adequately performed in order to achieve the general objectives.

While the development of such job descriptions was, without question, the most difficult and time-consuming portion of the evaluation, it is the author's view that the more exact the job description, the more accurate will be the subsequent evaluation.

Goal 3: To identify the individuals and/or groups which can provide the maximum information regarding the performance of each function.

In the past, many decisions regarding the performance of individuals have been made using the intuitive judgment of the supervisor or, at best, relying on second- or third-hand interpretations of the evaluatee's work or performance.

Procedures: Selection of information sources was based on the degree to which these sources had direct contact with the evaluatees and/or their work. Since each function could relate to a different group of individuals, both the evaluatee and his or her supervisor were asked to independently draw up a list identifying the most relevant sources for each function.

Phase 2. The Evaluation process

Step 1. Information gathering:

(a) Identifying the relative importance of each function. After developing objectives and a functional profile of each position, the importance of each function in relation to the overall position was ascertained. Since the evaluatee and his or her supervisor were best able to understand the objectives of the position and the activities by which these could be achieved, a form consisting of a defined list of functions and five-point ratings scales were completed by these two people.

(b) Identifying the relative importance of each information source. As our assumptions state, each information source is not of equal importance in assessing the performance of a particular function. If, for example, two information sources are identified for a function, it may be that one of these sources provides the major portion of the required information, while the other source provides additional information which is useful but relatively marginal. By assigning equal weights to both sources, the accuracy of the information would be severely reduced. For the same reasons as stated in "a" the evaluatee and his or her supervisor were again selected as the persons most suitable to make such decisions, and a form similar to that described above was used.

(c) Collecting respondents' ratings of performances. The instrument which was used to obtain the assessment of performances contained a list of those functions for which each information source had been identified. Again, each function was defined, and respondents were asked to rate the evaluatee's performance using a five-point scale ranging from superior to inferior. In addition, space was provided for the respondents to write, in open-ended form, their reasons for selecting a particular point on the scale. They were also asked not to rate the performance of any function for which they felt they had insufficient information.

Step 2. Organization and tabulation of data:

(a) Relative importance of each function. For each function, an average (mean) rating was computed by adding the ratings of the evaluatee and supervisor together and dividing by two. If there was more than one person in a particular job category, an average rating for all evaluatees in that position was first obtained and then combined with the supervisor's rating as described above. The resulting coefficient for each function was then used for weighting purposes.

(b) Relative importance of each information source. Using the same procedure as outlined in "a" above, *information source* was substituted for *function* and weighting coefficient was derived for each information source.

(c) Respondents' ratings of performance. Using the two weighting coefficients developed above and the performance rating data, tables were constructed for each position.

(d) Written commentaries. The open-ended commentaries on performance provided by each information source were then compiled according to function and further categorized as negative or positive.

Step 3. Analysis of the data:

Goal 1: To identify any significant perceptual differences between evaluatees and their supervisors regarding the relative importance of the various functions which make up a particular position.

If, for example, the evaluatee perceives his or her major purpose as carrying out function A, a greater proportion of time and effort will probably be spent in this area than, let us say, on function B. Assuming there is some positive relationship between time/effort and effectiveness, the performance rating of function A should be higher than that of function B. If the latter function is perceived by the supervisor as being the primary function of the evaluatee, effective performance of function A will not affect the supervisor's overall assessment of the evaluatee's performance to the extent expected by the evaluatee. In a more general sense, decisions resulting from an evaluation based on two differing frames of reference will not accurately reflect the effort or performance of the person being evaluated.

Procedures: The decision as to what could be considered a significant difference was arbitrarily based on the total number of job functions for each administrative position.[3] Significance of differences in ratings were established according to the following criteria: (a) if there were fifteen or less job functions, a difference of one point was viewed as significant; (b) if there were more than fifteen functions, a difference of two points was considered significant. These criteria were based on the assumption that the fewer the number of functions, the more agreement there should be between raters. The number fifteen was selected by taking the midpoint of the range of the number of job functions for all those being evaluated.

Goal 2: To provide a means of identifying the relative effectiveness with which evaluatees perform various functions.

Procedure: Utilizing respondents' ratings of performance and the weighting factors developed for each information source, performance coefficients were calculated for each function using the following formula:

$$P_x = \frac{\frac{\Sigma R_s}{M_s} \cdot b + \frac{\Sigma R_{s'}}{M_{s'}} \cdot b + \ldots + \frac{\Sigma R_{sn}}{M_{sn}} \cdot b_n}{b + b' + \ldots b_n}$$

Where:

P = performance coefficient
X = a function
R = ratings of performance
M = maximum possible rating times number of respondents
s = information source
b = information source weighting factor
n = number of input sources in series

Goal 3: To provide a means of comparing performances of functions and of positions as a whole from one evaluatee to another and for the same evaluatee over time.

Procedure: Utilizing the performance coefficients for each function plus their weighting factors, an evaluation coefficient for each position was calculated using the following formula:

$$E = \frac{P_x \cdot y + P_{x'} \cdot y' + P_{xn} \cdot y_n}{y + y' + \ldots y^n}$$

Where:

E = evaluation coefficient
P = performance coefficient
x = a function
y = weighting factor of function
n = number of functions in series

Goal 4: To provide a means of identifying the particular personal attributes which information sources have associated with the positive and negative aspects of each evaluatee's performance.

Procedure: All functions were first grouped into either management or adaptive functions.[3] The former is defined as functions which require effective and efficient coordination of human and nonhuman resources for the purpose of achieving stated objectives and which would include such activities as staff coordination and supervision, committee work, monitoring departmental operations, carrying out administrative assignments and controlling departmental budgets. The latter is defined as functions which address themselves to the growth of the administrative unit and the institution as a whole. These are functions which require flexibility, adaptability and a sharing of information and ideas. Examples of such activities are staff development, public relations, advising or consulting, short- and long-range planning, and research and development. By identifying the positive and negative portions of each written comment and placing these in the appropriate management or adaptive category, an overall profile of the evaluatee's strengths and weaknesses can be developed and related to the requirements of the position.

Phase 3. The Postevaluation process

Goal 1: To clarify for the evaluatee and his or her supervisor the relative importance of each function in the overall context of the position.

Procedure: Utilizing the procedure outlined in phase 2, step 3, goal 1, differing perceptions between evaluatees and their supervisors of the relative importance of various functions were identified. Where these perceptions were significantly different, a series of meetings was arranged by the supervisor to discuss and clarify any misunderstandings.

Goal 2: To develop a means of comparing administrative performances both between positions and for the same position over time.

Procedure: (a) Since for both the performance and evaluation coefficients the possible range of scores is not 0.00 to 1.00 but 0.20 to 1.00 (because a person receiving the lowest score is receiving 1/5th or 20% of the highest score), the most appropriate way to interpret each coefficient is to express it in terms of the percentage that a particular coefficient is of the total score. Figure 1 illustrates the relationship between the coefficients and the percentage that each is of the whole.

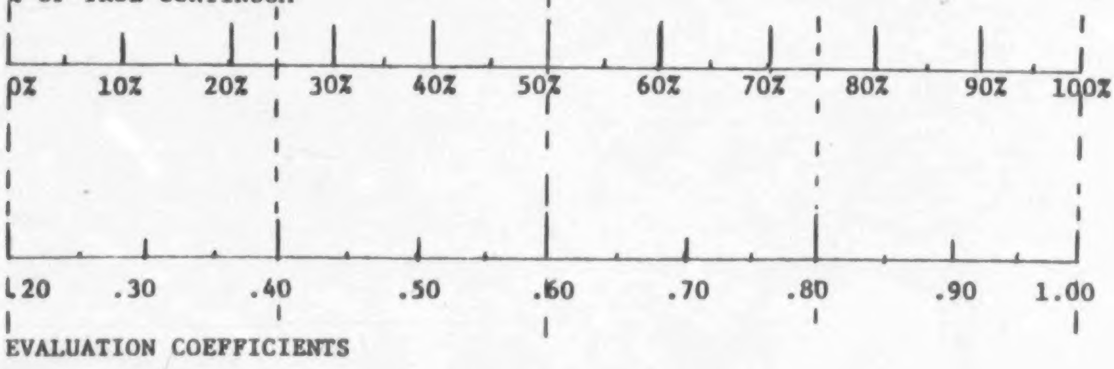


Figure 1. Relationship between evaluation coefficients and percent of true continuum.

The coefficient for the position as a whole can be used as a basis for comparing individual performances over time and also for comparing one evaluatee against all others. It is this latter use which will raise many hackles and cries of indignation. Let the author, therefore, explain in more detail why he believes such comparisons can be valid. A summary of the evaluation coefficients for the twenty-one participants shows the following:

N: 21
Range: 0.552–0.812
Mean: 0.699
Standard deviation: 0.067
Median: 0.682

Figure 2 shows the bell-shaped distribution of these evaluation coefficients.

Since the scores conform closely to the characteristics of a normal distribution (that a certain percentage of the scores must fall between each standard deviation), a basis for establishing acceptable and unacceptable performance levels is provided. Table 1 illustrates how such a grouping could be developed for the 21 participants at MacEwan Community College.

Table 1

A Group of Evaluations Given Administrators at Grant MacEwan Community College

Standard deviation	Number within range	Description
+1	8	Acceptable
−1	8	Acceptable
+2	2	Very acceptable
−2	2	Marginally acceptable
−3	1	Unacceptable

Because the coefficients are admittedly a crude measurement, only those performances which fall within the −3 standard deviation might be considered seriously lacking (urgently requiring help and improvement) and conversely, those within the +3 standard deviation might be considered as excellent (almost beyond need for any further development). Since the basis for such judgments is the conformity of an array to a normal distribution, it is only by comparing results across institutions and over time that we will eventually obtain support or rejection for such an hypothesis.

Goal 3: To provide information which can be used in improving performances.

Procedure: As could be expected, certain weaknesses in performing various functions were identified in nearly all cases. Priorities for individual development were established by examining and comparing the *performance of functions* coefficients. As would be expected, high priority was given to the improvement of functions identified as most or very important and which had coefficients lower than the norm. A close examination of the written comments usually identified areas of knowledge, skills, or attitudes which needed improvement, and appropriate development strategies were then worked out between the evaluatee and his or her supervisor.

Phase 4. Postevaluation workshop

Following the distribution of evaluation reports to each participant, a postevaluation workshop was held. The objectives of this workshop were: (a) to obtain feedback from participants in order to improve subsequent evaluations, and (b) to identify the means and procedures by which evaluation information can best be used for administrative development.

Included in the workshop material was a questionnaire which asked participants the degree to which the evaluation helped them in developing a better understanding of the functions and duties of their positions and in identifying weak and strong areas of their performances. Participants were also asked whether they felt that an evaluation of this type should

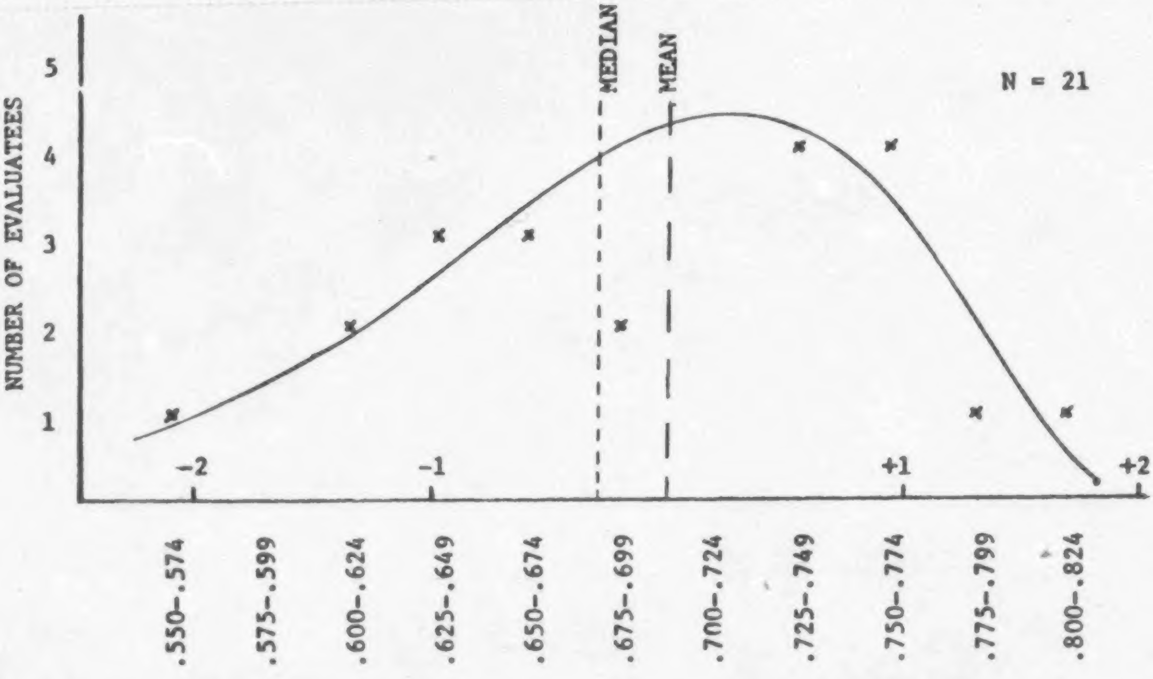


Figure 2. Distribution of evaluation coefficients.

be carried out on a regular basis and asked them to describe any major disadvantages or advantages of this particular evaluation procedure in terms of their own personal experiences. Responses to the questionnaire were as follows:

1. Seventy-two % of respondents felt the evaluation was at least quite helpful in developing a better understanding of the functions and duties of their positions.

2. Ninety % of respondents felt the evaluation was at least quite helpful in identifying weak areas in their performances.

3. Fifty % of respondents felt the evaluation was at least quite helpful in identifying strong areas of their performances.

4. Eighty-three % of respondents felt this type of evaluation should be carried out on a regular basis.

5. Major disadvantages which were identified included these: "A lot of time is required completing the forms," and "In some cases the process may have been used to get at a person rather than for providing feedback that would be of positive assistance."

6. Major advantages which were identified included these: "The process makes you think of your job—what it is and what it should be;" "People were able to say things in writing that otherwise would have gone unsaid;" "Allowed me to zero in on weak points in my performance;" "Gives an opportunity to look at performance in a nonthreatening manner;" "Provides others with an opportunity to look at my performance in a systematic manner and express opinions in a confidential way;" and "It is a comfortable feeling to know that some people believe I am doing a reasonable job for the college and my department."

Discussions during the workshop centered around future uses of the evaluation. It was agreed that each participant would continue to determine the purposes or roles of the evaluation. It was also decided that participants would ask for an evaluation when they felt it was needed rather than have everyone evaluated at the same time. Those who wanted the evaluation used for salary and increment purposes would provide information at the appropriate time. Others would determine the time of their evaluation on the basis of the amount of developmental activities they were undertaking.

Conclusions

Participants in the Grant MacEwan administrators' evaluation generally seemed to approve of a systematic approach to evaluation. Surprisingly, few negative comments were received regarding the use of numerical coefficients. Most participants seemed to rely heavily on the written comments and made the least use of their overall coefficient. The coefficients of functions were felt to be useful in identifying weaknesses and strengths.

Footnotes

[1] Grant MacEwan Community College, located in Edmonton, Alberta, Canada, had been in operation since 1971. It presently has an enrollment of approximately 2400 FTE's and a full time staff of 110 faculty and 28 administrators.

[2] During the pilot testing stage, both rank-order correlations and t tests were used to identify differences. Neither proved reliable for a number of reasons.

[3] In the pilot test, each function was categorized as one of *management, adaptive* or *maintenance*, the latter being defined as "mediating between the needs of the individual and the demands of the role." This includes specific administrative assignments expected of the individual. Discussions with administrators indicated that most saw maintenance activities as part of their managerial functions. For this reason, the two categories were collapsed into one.

References

Scriven, M. The methodology of evaluation. *Perspectives of Curriculum Evaluation, AERA Monograph Series on Curriculum Evaluation, No. 1.* Chicago: Rand McNally, 1967.

ASSESSING INSTITUTIONAL FACULTY GROWTH AND DEVELOPMENT DYNAMICS

Violet A. Towne
Robert G. Simerly
Syracuse University

Before 1973, the concept of planning for the most effective utilization of faculty resources in higher education had not received prominent attention. However, it is estimated that since 1973 over 500 faculty development programs have been initiated in our nation's 2,792 colleges and universities. These faculty development programs take many forms. For example, the IDEA faculty development program at Kansas State emphasizes giving instructors course evaluation data. Gordon College has initiated individual growth contracts for its faculty. The Center for Instructional Development at Syracuse University focuses on improved methods of instruction. Other colleges send faculty to workshops on faculty development or they institute faculty development workshops within their own institutions. The College of the Finger Lakes has been active in this respect.

The current interest in faculty development has occurred primarily for the following reasons:

1. *Decreased mobility for faculty*—Because there are more college professors qualified for positions than there are positions available, professors are experiencing fewer opportunities to move from one institution to another. As a result, in order to plan for a change, educational leaders within institutions are beginning to consider how best to ensure that faculty members engage in self-renewal so that they can actively contribute to the goals and objectives of their institutions.

2. *Pressures for accountability*—As a result of tight budgets for higher education throughout the country, state legislatures, boards of trustees, and the multiple publics served by higher education are beginning to demand that institutions actively demonstrate that their faculty are responsive to the needs of the institution and to the needs of the students. Faculty development efforts are a visible way to accomplish this.

3. *Accent on student learning*—While people at many levels are demanding accountability, one of the main thrusts has been accountability for student learning. Cross (1975) views "accent on student learning" to be the phrase of the 70s in higher education. In the 50s the theme was accent on selection; in the 60s the theme was accent on access.

4. *Research on faculty members*—Since 1960, higher education has increasingly become a legitimate academic area of study within colleges of education. As a result, the data base about faculty members in higher education is constantly expanding. A major focus of this research is concerned with how faculty members grow and develop in their professional roles.

5. *Concerns for integrating the individual and the organization*—Inasmuch as current management literature has emphasized the necessity for integrating the needs of the individual and the organization, there has been an increased concern for such integration. McGregor, Argyris, Bennis, and Likert are among those who have helped educational leaders conceptualize the need for this complex integration.

The number of writers who have begun to contribute to the information base about faculty development has grown steadily in the last five years. Simerly (1973) is among those who have studied various dimensions of faculty growth and development. (Diagram 1 shows his 1977 conceptualization of the component parts of a faculty person's roles.) Simerly contends that it is essential to consider these dimensions when viewing the complex interaction between faculty members and the academic organizations in which they work.

The research design presented in this paper expands on Simerly's initial study and also investigates the process components of the personal, professional, and organizational dimensions of faculty members' roles. The purpose of the current study is to gain new insights into the factors that contribute to or stand in the way of the professional growth and development of academicians. It is anticipated that an improved understanding of the interaction between professional faculty members and universities will be helpful to institutional researchers, administrators, and faculty members who are interested in designing environments that lead to the maximization of all institutional resources—especially faculty members.

Using a large, private university in the Northeast with approximately 16,000 students and 800 faculty members, a random sample of 5 percent of the faculty, stratified by the ranks of assistant, associate, and full professor, was selected. Interviews were held with 39 professors for the purpose of gathering data about their perceptions of various aspects of their professional growth and development. A structured interview schedule consisting of 42 questions was built around seven sets of constructs which relate to organizations. These constructs were viewed to be particularly relevant in studying the process components of faculty members' roles. The seven sets of constructs included the works of Maslow (1954), Porter (1961), Carpenter and Strawser (1971), Argyris (1957), Lewin (1947), Herzberg, Mausner, & Snyderman (1959), and Gouldner (1957 & 1958). In addition to these constructs, research about faculty development which was completed by Simerly (1973), Gaff and Wilson (1975), and Bergquist and Phillips (1975) also provided guidelines for procuring important data.

Individual Needs

Twelve interview questions were based on Maslow's (1954) hierarchy of individual needs which posits that the desire to satisfy basic needs is the prime motivating force underlying individual behaviors. This conceptual framework has been tested in numerous organizations. Maslow contends that people seek to fulfill their needs in a hierarchical fashion—physiological, security, social, esteem, and self-actualization—and that a higher level need will serve as a motivator only after a lower level need has been reasonably well met.

Porter (1961) has devised instrumentation for measuring the present level of basic need fulfillment as well as the desired level of need satisfaction. Although Porter has applied this instrumentation to numerous organizational settings, few researchers have used it in the field of education. Trusty and Sergiovanni (1971) have applied this instrument to public school personnel. Carpenter and Strawser (1971) have administered a modified form to accounting professors. While Porter's instrument differentiates between the existing and desired levels

Dimensions of faculty development	Conceptual components	Process components
Personal	Adult life stages	Human motivation Individual growth changes Adaptability Attitudes
Professional	Career path	Tenure-promotion Socialization to role Local-cosmopolitan reward orientations Mobility within profession
Organizational	College and university environment	Organizational mobility Adaptive techniques Real and perceived reward systems Organizational conflict management Curriculum reform

Diagram 1. Components of an over-all concept of faculty development.

of basic need fulfillment to determine a "need satisfaction" score, Carpenter and Strawser label this needs differentiation as a measure of "need discrepancies."

A portion of the research described in this paper also focuses on need discrepancies. Diagram 2 illustrates the discrepancy scores that were derived from the members of the sample for each need category. A low score shows that there is little discrepancy between the existing level of need fulfillment and the desired level of satisfaction. The assumption then is made that a larger discrepancy score represents a smaller degree of satisfaction for that basic need category. (p. 513).

Our study reveals that faculty have the lowest discrepancy score (.3) and thus the greatest satisfaction with their work in the esteem category. This includes the amount of prestige and regard professors think they receive from their employing organization as well as what they receive from their profession at large. The largest discrepancy score (.7), and thus the least satisfaction with their work, occurs in the autonomy category with the social and self-actualizing categories revealing discrepancy scores that are almost as high (.6).

Even though we see lower and higher discrepancy scores between existing levels of need fulfillment and desired levels of need satisfaction, the verbal comments from the majority of professors in our sample indicate that their individual needs are generally satisfied.

Typical of the comments made by the faculty members in our study about need fulfillment is the following:

> I think I have done the right thing in life. I am in the right place; I stand sufficiently rewarded for what I have done. I have no alternatives in mind. In other words, I am doing exactly what I should be doing, and the daily frustrations or other things are just part of life. I feel if I die tomorrow my last comment will be, "Yes, I led a satisfactory life as far as my professional life is concerned." I wanted it that way, and I wish everyone could be that happy. Even if I don't know if my contribution is that great, I still won't be frustrated—I am too old for that.

Organizational Goals

Three interview questions were developed around Argyris' (1957) theory of the incompatibility between individual needs and organizational goals. Argyris believes that it is absolutely essential for the inevitable conflict between the needs of the individual and the demands of the organization to be acknowledged, discussed, and managed. He says that an effective organization is one that achieves goals, maintains itself internally, and adapts to its environment.

The data from our research reveal that the faculty members in the sample understand their departmental goals and objectives very well, but their satisfaction with these goals and objectives is only average. Fortunately, they seem concerned about the situation and express considerable interest in altering these goals and objectives. Specifically, assistant professors report the most satisfaction with the goals and objectives, yet they express the greatest interest in changing them. Associate professors, on the other hand, indicate less satisfaction with the goals and objectives and, as a group, are the least interested in altering them, while full professors show the least satisfaction but are more interested in change.

These data imply that there is a willingness on the part of faculty to examine their departmental goals and objectives and to work for change where necessary. Such a re-examination or alteration might very well reduce the incompatibility between individual needs and departmental goals for this group of university professors. It is also important to note, however, that one of the things faculty understand is that goals are often vague and not expressed.

Typical of the comments about departmental goals and objectives made by members of our sample is the following:

"I think I understand that they are very poorly defined at best, but I understand that pretty well."

Teaching, Research, and Service

Nine interview questions were developed from field analysis theory by Lewin (1947) and faculty development research by Simerly (1973) and Gaff and Wilson (1975). Lewin's theory posits that change is the result of an imbalance between two sets of opposing forces—driving forces that push for change and restraining forces that discourage change. He also contends that patterns of human behavior are in constant dynamic equilibrium and that it is crucial to analyze the forces that work on individuals at a particular point in time in order to learn where change, such as a faculty development program, might be introduced.

Gaff and Wilson surveyed 1,000 professors about various aspects of faculty development and concluded that most faculty do not think that teaching is regarded as important in their respective organizations. Neither do they think that good teaching performance is rewarded. They also identify faculty development programs as a viable vehicle for raising faculty consciousness about teaching, expanding knowledge of alternative teaching technologies, and increasing teaching skills. Simerly's research confirms this.

Our findings support the results of the Gaff-Wilson study and Simerly's earlier research. Over half of the professors in the present study believe that teaching comprises the major focus of their professional activity. In addition, they think that teaching-related activities contribute the most to their professional development. However, they do not think that teaching and working with students is as likely to result in tenure and promotion as is research that leads to publication.

When asked about the type of support provided for teaching, research, and service, a majority of responses referred to items like funds, resources, and facilities—items that Herzberg, Mausner & Snyderman (1959) would undoubtedly categorize as hygiene factors because they tend to satisfy the lower-order needs on Maslow's hierarchy. On the other hand, professors see

INTERVIEW QUESTIONS

On the rating scale, would you indicate. . .

. . .how much self-fulfillment or sense of worthwhile accomplishment you presently have as a faculty member?

. . .how much opportunity you have to participate in setting goals and objectives for your department?

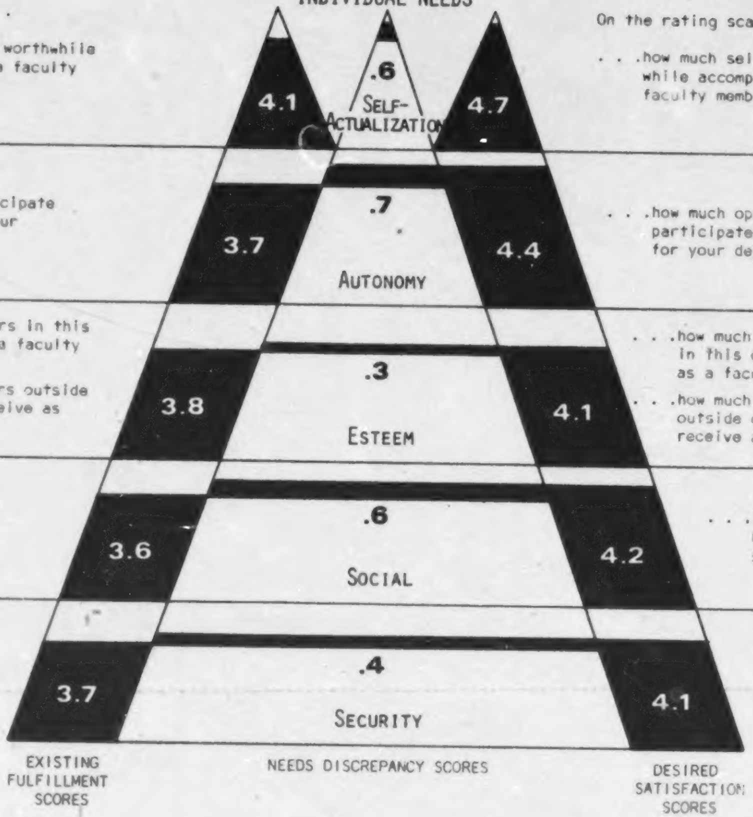
. . .how much prestige and regard from others in this organization you presently receive as a faculty member?

. . .how much prestige and regard from others outside of this organization you presently receive as a faculty member?

. . .how much opportunity you have for developing close friendships in this organization?

. . .how much security you feel you have in this organization?

FULFILLMENT OF INDIVIDUAL NEEDS



INTERVIEW QUESTIONS

On the rating scale, would you indicate. . .

. . .how much self-fulfillment or sense of worthwhile accomplishment you should have as a faculty member?

. . .how much opportunity you should have to participate in setting goals and objectives for your department?

. . .how much prestige and regard from others in this organization you should receive as a faculty member?

. . .how much prestige and regard from others outside of this organization you should receive as a faculty member?

. . .how much opportunity you should have for developing close friendships in this organization?

. . .how much security you feel you should have in this organization?

RATING SCALE				
1	2	3	4	5
Low	B.Avg.	Avg.	A.Avg.	High

Diagram 2. Discrepancy scores derived from the members of the sample for each need category.

considerably less support in terms of encouragement, freedom, promotion and tenure—items that Herzberg would refer to as motivation factors or satisfiers of the higher-order needs on Maslow's hierarchy. Our data clearly imply that the university does a better job of helping its faculty members to avoid dissatisfaction than it does of helping to achieve satisfaction.

When asked about the aspects of the working environment in general that promote professional growth and development, again over half of the responses from our sample referred to hygiene factors such as the library, other physical facilities, leaves of absence, research funds, and support personnel. More than one-fourth of the comments mentioned human factors such as students and colleagues, and the remaining remarks referred to motivation factors like a positive university attitude, individual autonomy, and personal motivation. The data from Simerly's study revealed basically the same results.

These data constitute a two-sided coin, however. While the above-mentioned factors are believed to promote professional growth and development, the absence of such factors is perceived to hinder growth and development. For example, lack of psychological support from the university, lack of personal motivation, and work overload were mentioned in half of our responses as blocking growth and development. Such things as inadequate facilities and lack of money for research, travel, secretaries, and graduate assistants were cited as a hinderance in more than one-fourth of the comments. Lack of colleagiality was discussed as a hindering factor in the remainder of the responses.

Faculty members are very conscious of the driving/restraining forces that affect their growth and development in teaching, research, and service. Typical of the comments made about these three areas of the promotion and tenure system is the following:

> In terms of encouragement, talk is cheap. There is a lot of encouragement for teaching. When it gets down to money and promotion, it's not quite so high as far as teaching goes. In terms of research, there's a lot of encouragement for research and publication. It's primarily promotion and tenure but also the availability of research funds and applying for grants. So the university does give a lot of support. There is some acknowledgement on the basis of debates in faculty meetings about the ambivalence about service to the university. One segment thinks that service to the department, to the university, is very important; others say it's not so important and let's not put too much emphasis on it.

Reward Systems

Nine interview questions investigated various dimensions of the reward system. These questions were developed from Lewin's theory of field analysis as well as from Gouldner's (1957) local/cosmopolitan theory of rewards. Gouldner views "cosmopolitans" as individuals whose commitment is essentially to the profession at large and "locals" as those who exhibit primary loyalty to the organization.

The professors in our sample report that they have a below-average satisfaction with their monetary rewards. However, they have an above-average satisfaction with other rewards such as academic and personal freedom; tuition for spouses and children, insurance, retirement benefits, travel allowances; interaction with students and colleagues; recognition, prestige, regard, and the promotion and tenure possibilities. There is one notable exception to this general trend, however. Associate professors reported the least satisfaction with the reward system and indicated that they believe the overall university reward structure hinders their growth and development more than it helps.

In general, the faculty members said they would like to see a greater clarification of the reward system that would provide for more flexibility and allow for greater emphasis to be placed on teaching and working with students. In addition, they would like greater psychological support from the university in terms of recognition, appreciation, and greater interest in them as faculty members.

Almost half of the professors in this study think that they acquire their rewards equally from the university and from the profession at large. Over one-fourth of the professors believe that most of their rewards come from outside the university, while the remaining one-fourth of the professors think that the majority of their rewards come from inside the university. As might be expected, full and associate professors are more likely to view their profession as the major source of rewards than are their junior-level colleagues. Three-fourths of the faculty members envision outside rewards to consist of tangible activities like lecturing or speaking at conferences, conventions, and seminars; or writing books, articles, and other publications. A few talk about consulting jobs such as working for the Public Employment Relations Board, setting up labs in foreign countries, or refereeing papers for journals. Some include personal accomplishments like exhibits, performances, private practices, and research grants as a source of tangible outside rewards. Only one-fourth of the comments about outside rewards refer to intangible factors that have a common thread of recognition, prestige, and regard.

Typical of the comments that faculty members made about the rewards system is the following:

> I like the freedom I have to choose my hours—to work when I want to work and to do what I want to do. I have pretty good leeway on that. I can't teach at 3 in the morning, but I can work at 3 in the morning. It's also personal freedom—I can dress like this and wear sloppy pants and Beethoven shirts and do what I want to do. If they don't like it the worst thing they can do is not promote me, and that's not the worst thing in the world either. If I was very straight, being nice to people even when I didn't like them, I'd get promoted earlier and have bigger salary increases, but even that's marginal. It's not like the business world where if you don't do that you're out—goodby!

Thus, the things that faculty members tend to like most about the reward system are the things that contribute to their autonomy, their fringe benefits, and their interaction with people. The things that faculty members like least about the reward system are inadequate salaries and other tangible items such as inadequate services and physical facilities.

Teaching Changes

Five interview questions were based on a portion of Simerly's (1973) research that identified various aspects of professional growth and development resulting from teaching changes made by professors at a state university in the South. Simerly found that the major change was an alteration in teaching methodology that de-emphasized the lecture method. This change was generally triggered by interaction with colleagues and feedback from informal student evaluations.

The present research also reveals that the majority of changes in teaching were in the methodological area. They included the way information was delivered, the use of different materials, and the individualization of instruction. Other changes in teaching referred to alterations in course content or the curriculum. An overwhelming majority of the professors felt that the changes they had made in their teaching resulted in a positive impact on them as well as on their students.

People were cited most frequently as the change agents, and these people included the professors themselves as well as their peers, students, and department chairpersons. New horizons in the profession and "keeping up with the times" were mentioned as factors that were responsible for change. The faculty members evaluated their changes both formally and informally with more responses alluding to informal judgments derived from student comments, colleague feedback, student productivity, and personal political prowess. A considerable number of responses, however, reflected the use of formal evaluation practices like questionnaires, exam scores, and experimental research to ascertain the value of their teaching changes.

These data show that changes in the teaching process are viewed to be more important than changes in course content, and such process changes come about largely because of other people. Faculty members place a positive value on these changes and are attempting to evaluate the effects of their change efforts.

Typical of the comments that professors made about changes in their teaching is the following:

> The desire for promotion was not unimportant in making the change in my teaching. That's carrying a stick over you and it is of some consequence. Also crucial in the promotion process is the student input. Unfortunately, students who get along with you are not verbose about it. The correct strategy for getting promoted as soon as possible is not to rock the boat—don't make waves, don't take risks, don't do new things. Whenever I do new things, those who like it shut up, but those who hate it say so. I decided not to fight the battles any more. I'll get promoted and then maybe go back to my old way of teaching.

Faculty Development

The last four questions on the interview schedule were based on Bergquist and Phillips' (1975) work and a portion of Simerly's (1973) study. Bergquist and Phillips contend that faculty development can be accomplished through a comprehensive program which includes development in the personal, instructional, and organizational dimensions. Simerly suggests that faculty development should be a continuous, ongoing program focusing on the process of faculty development rather than on specific content.

The results of the present research reveal that 87 percent of the professors report no faculty development program in their department, 10 percent are not sure whether they have one or not, and 3 percent say that there is a program in the department. Only two professors expressed total lack of interest in faculty development activities—one was nearing retirement and the other had just learned that his program was being eliminated. Simerly also reported that the majority of professors in his study said that there was no faculty development program at their institution. However, he found somewhat less interest in a planned program—only 26 percent of the sample were interested in having faculty development, 52 percent were unsure, and 12 percent did not want one.

While the professors in the present study rated their interest in faculty development very high, it is interesting to note that the assistant professors reported the greatest amount of interest, followed by associate and full professors respectively.

When asked to identify the people who should be responsible for initiating a faculty development program, 54 percent of the respondents mentioned the departmental chairperson with some help from the faculty. Thirty-three percent of the professors thought that the faculty themselves should be the initiators, and 10 percent of the sample saw it as the dean's job. Only 3 percent of the professors felt that professional growth and development should be an individual responsibility and that there was no need for a planned program.

The professors in this study discussed numerous aspects of a planned faculty development program, but nearly three-fourths of their responses expressed interest in increased sharing with colleagues, more encouragement from the university, and greater assistance for improving instruction. One-fourth of the comments indicated a desire for improved financial assistance and relief time. Simerly's data revealed approximately one-fourth of the sample not knowing what to include in a faculty development program, one-fourth requesting sabbaticals and conventions, one-eighth concerned with individualized programs, and the remainder wanting assistance with their teaching.

Analysis of the data from the present study clearly indicates that faculty members see a real need for assistance in becoming more effective and efficient in the tasks they encounter as faculty members. They have some definite ideas about who should take the lead and what a program should include, and they are adamant about designing a flexible program that deals with individual concerns rather than a rigid one that forces everyone into the same mold. Many professors offered their help in planning any faculty development program that would help them become better at what they do.

Typical of the comments that these professors made about faculty development is the following:

> If industries have development programs why not universities. One of the members of our department who has been here for 20 years gets negative feedback on his teaching. It's too bad. Rather than lamenting about it, why isn't someone working with him to review his teaching and perhaps helping him to improve? After all, we recognize he'll probably be around for another 20 years. That would be part of a development program and there is no reason why experts can't be brought in or otherwise secured so as to help people improve in all areas.

Conclusions and Implications

In summary, our study reveals the following information about the majority of the faculty members:

1. They are generally satisfied with the overall fulfillment of their individual needs. Specifically, they experience most satisfaction in the area of esteem needs and the least satisfaction in the area of autonomy needs. In addition, self-actualization and social needs provide less satisfaction than security needs.

2. They understand the goals and objectives of their departments very well, but they have only an average amount of satisfaction with them. Frequently, they find the goals and objectives to be vague or poorly articulated, but they are interested in working to change the situation.

3. They view teaching activities as the source of central activity and satisfaction in their professional lives. However, they do not believe that quality teaching is instrumental in gaining their tenure and promotion.

4. They believe that the university does a better job of helping them to avoid dissatisfaction than it does in helping them to achieve satisfaction. More precisely, the university tends to provide support for their concrete, lower-order needs and not supply it for their psychological, higher-order needs.

5. They are not very satisfied with the monetary rewards they receive from the university, but they tend to be satisfied with the other tangible rewards and the psychological rewards that are provided. In general, they would like to see more clarity and greater flexibility within the reward system.

6. They have made the most changes in their teaching by altering their methodology so that information is delivered in a

variety of ways. Overall, they are pleased with the changes they have made and believe that their students are too. It is interesting to note that most professors attempt in some way to evaluate the success or failure of their teaching changes.

7. They report that practically none of their departments provide planned faculty development programs. However, they are very interested in such programs and express a willingness to participate in them. Most professors believe that the department chairperson should be responsible for initiating a faculty development program, and they are adamant about maintaining flexibility to accommodate individual concerns.

Our study has several implications for institutional researchers who are often asked to provide information about faculty to institutional policy makers. Although a number of computerized ways for reporting faculty load have been devised, little has been done to develop procedures for reporting other kinds of information about faculty. While faculty load data certainly are very necessary, they are far from sufficient for the university that is concerned with the best utilization of one of its largest human resources—the faculty.

According to Warden (1974), institutional research has been very limited in the past and has had little, if any, impact on unit planning and virtually no impact on faculty improvement. In addition, institutional researchers are frequently viewed as the enemy because they are an extension of central administration, and as a result they tend to be isolated from academic goals and faculty concerns.

Warden is also among those who speak about the need for expanding institutional research. She says that "any method used to gather data on faculty activity should permit analysis of a wide range of activity categories and related intended outcomes" (p. 463). It is our contention that an important dimension of this wide range of institutional research activity is the inclusion of faculty concerns about their professional growth and development. Not only should there be a vehicle, such as the one described in this paper, for gathering and reporting this information, but this valuable part of institutional research should be fed back to faculty members themselves.

In addition to increasing the worth of the institutional researcher's data bank, such faculty-centered research would undoubtedly result in a number of other very positive outcomes. Warden (p. 471) suggests that faculty would probably become more productive as a result of being in the experimental spotlight (the Hawthorne effect) and that faculty attitudes toward central administration would be likely to improve because institutional researchers would no longer be viewed as the "bad people." Also, faculty members might start to view reallocated priorities and limited resources as a challenge to their ingenuity rather than as a barrier to the execution of their work.

We believe that this new dimension of institutional research would lead to a better integration of individual needs and organizational goals as well as an improved correlation between reward systems and desired outcomes. Faculty members would have greater incentive and more support to change, grow, and develop in their various roles.

Certainly universities can profit a great deal if institutional researchers begin to seek information that allows them to analyze what might happen in addition to data that permits them to justify what already exists.

References

Argyris, C. *Personality and organization.* New York: Harper & Row, 1957.

Bergquist, W.H. & Phillips, S.R. *A handbook for faculty development.* Dansville, NY: Dansville Press, 1975.

Carpenter, C.G. & Strawser, R.H. A study of the job satisfaction of academic accountants. *The Accounting Review*, 1971, *46*, 509–518.

Cross, K.P. *Accent on learning.* San Francisco: Jossey-Bass, 1975.

Gaff, J.G., & Wilson, R.C. *College professors and their impact on students.* San Francisco: Jossey-Bass, 1975.

Gouldner, A.W. Cosmopolitans and locals: Toward an analysis of latent social roles-I. *Administrative Science Quarterly*, December 1957, *2*, 281–306.

Gouldner, A.W. Cosmopolitans and locals: Toward an analysis of latent social roles-II. *Administrative Science Quarterly*, March 1958, *2*, 444–480.

Herzberg, F., Mausner, B., & Snyderman, B.B. *The motivation to work.* New York: John Wiley & Sons, 1959.

Lewin, K. Frontiers to group dynamics. *Human Relations*, 1947, *1*, 5–41.

Maslow, A.H. *Motivation and personality.* New York: Harper & Row, 1954.

Porter, L.W. A study [illegible]rceived need satisfaction in bottom and middle management jobs. *Journal of Applied Psychology*, 1961, *45*, 1–10.

Porter, L.W., Lawler, E.E., & Hackman, J.R. *Behavior in organizations.* New York: McGraw Hill, 1975.

Simerly, R.G. A study of faculty perceptions of professional growth and development at the University of Tennessee, Knoxville. Unpublished doctoral dissertation, University of Tennessee, 1973.

Simerly, R.G. Ways to view faculty development. *Educational Technology*, 1977, *17*(2), 47–49.

Trusty, F.M., & Sergiovanni, T.J. Perceived need deficiencies of teachers and administrators: A proposal for restructuring teacher roles. In F.M. Trusty (Ed.), *Administering human resources.* Berkeley, CA: McCutchan, 1971, p. 438–449.

Warden, S.A. Socio-political issues of faculty activity data. *Journal of Higher Education*, 1974, *45*(6), 458–471.

AN EXAMINATION OF THE USES OF FIVE MEASURES IN DETERMINING FACULTY WORK LOAD

Ralph E. Henard
The University of Colorado at Denver

The problems for postsecondary institutions, in allocating faculty resources and in providing supportive data for budget requests for additional faculty, will become more acute as institutional and state budgets tighten and as student enrollments decline. These conditions will increase the importance of measuring faculty work load.

The following five measures for determining faculty work load will be compared: (1) course credit hours taught, (2) student credit hours produced, (credit hours × number of students; calculated for each course), (3) class contact hours of faculty members, (4) and (5) faculty work load formulas of institutions that use adjustment factors to equate the teaching loads for different types of academic activity: lectures, labs, theses, etc.

The problem in using course credit hours taught, contact hours, or student credit hours (SCH) generated as measures of faculty work load is illustrated by viewing Figures 1, 2, and 3 showing the variances in these measures of work load for faculty members of the College of Engineering at The University of Colorado at Denver. How does faculty member 1 rank in the College of Engineering related to his or her proportions of the college totals? He or she is eighth in the number of credit hours taught (Figure 1), tied for second on contact hours (Figure 2), and third in SCH generated (Figure 3). In comparison, faculty member number 7 ranks first in credit hours taught, first in contact hours, and ninth in student credit hours generated.

The findings for faculty members 1 and 7 reveal the inconsistencies that occur when any one of the above measures is used to compare the work loads of faculty members in a single department. If student credit hours were used as the only measure, faculty member 1 would show a heavier work load than faculty member 7. On the other hand, if contact hours or credit hours were the single measure, number 7 would have the heavier work load.

The problem of comparing faculty work loads using credit hours, contact hours, or SCH becomes more complicated when two or more departments, disciplines or schools-colleges are involved. For example, faculty member number 1 in education has 5.5 more contact hours than faculty member number 1 in engineering. Faculty member 1 in education also has 379 more student credit hours generated and 17.5 more credit hours taught. Because the School of Education has a larger graduate program than the College of Engineering, the proportion of thesis, independent study, as well as practicum credit hours and student credit hours is much greater than for engineering. Thus, it is possible for education faculty members to show higher numbers of credit hours taught and student credit hours generated than is the case for engineering faculty members.

The variances in the proportions of the discipline work

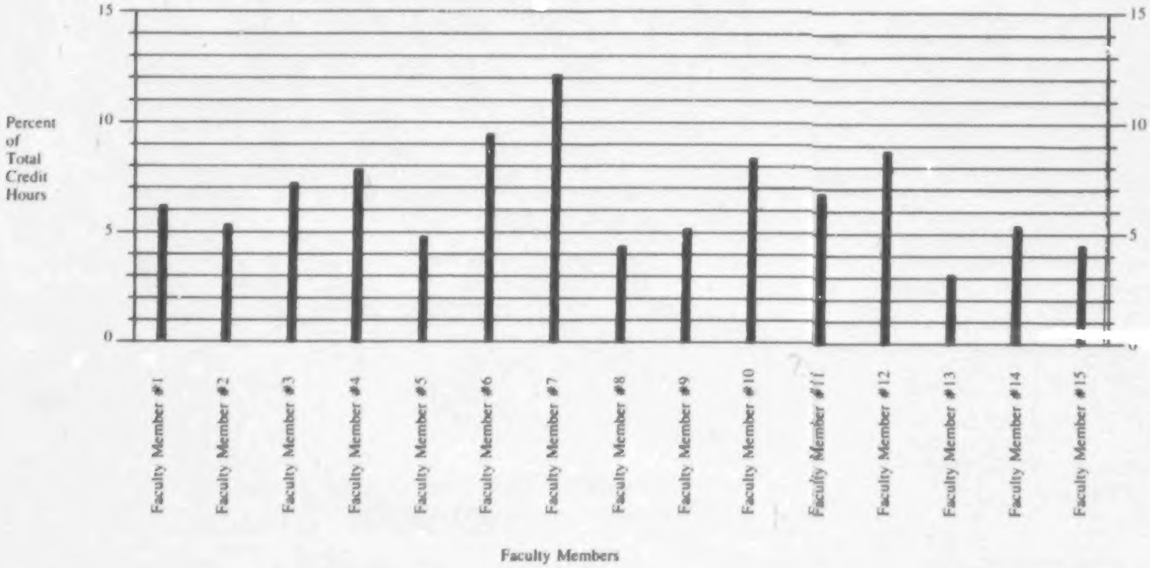


Figure 1. Graph for The University of Colorado at Denver showing the percent of total credit hours in engineering taught by each faculty member.

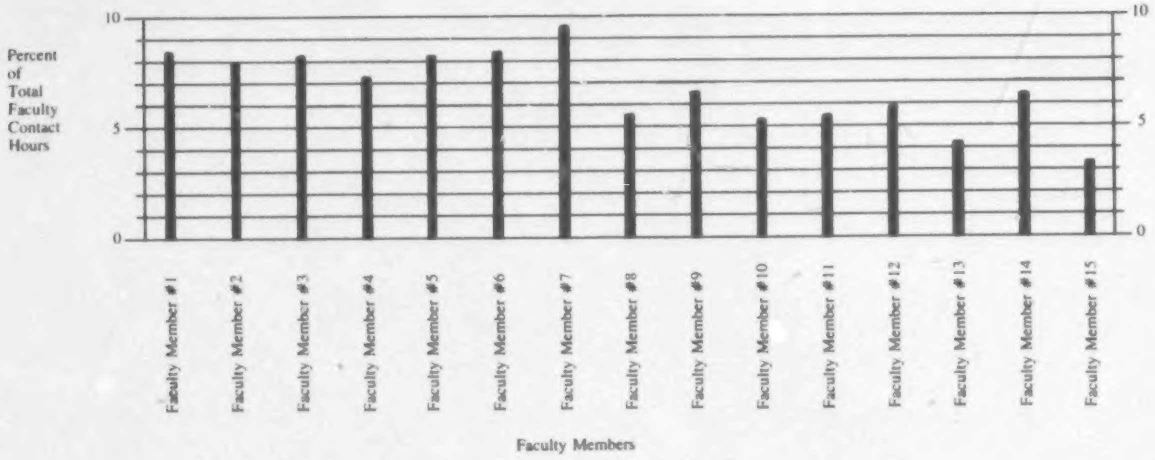


Figure 2. Graph for The University of Colorado at Denver showing the percent of total faculty contact hours in engineering for each faculty member.

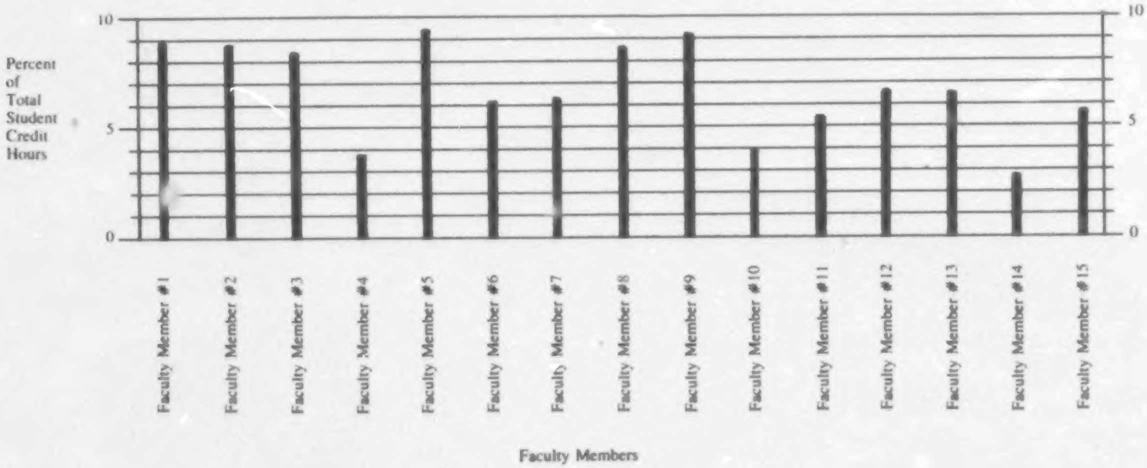


Figure 3. Graph for The University of Colorado at Denver showing the percent of total student credit hours produced in engineering by each faculty member.

load carried by individual faculty members were, also, the case for chemistry, economics, and English. However, the variances were not as great in economics and English as they were in chemistry because the latter has more varied instructional activities.

The Development of Formulas to Determine Faculty Work Load

Because the proportion of the total discipline or department work load for a single faculty member varies greatly when credit hours, contact hours, or student credit hours are used as measures, and because there may be an even greater variance in comparing the work load of two faculty members in different disciplines or departments, there has been an attempt to develop work load formulas that provide adjustment factors which weight different types of instructional activity (lecture, labs, etc.) and the levels (undergraduate, graduate) on which they occur. The adjustment factors are multiplied by the basic unit for a given instructional activity. For example, an undergraduate lecture course may have an adjustment factor of 1.0 while a graduate lecture course may have an adjustment factor of 1.5. The adjustment factors are multiplied by the credit hours of the course, thus a three-hour undergraduate course would produce three units of faculty work load (3 credit hours × 1.0 adjustment factor), while a three-hour graduate course would produce 4.5 work load units (3 × 1.5).

Table 1 compares the adjustment factors that have been developed by two universities designated as university 1 and university 2. An examination of the adjustment factors and the basic units shows that each institution uses the same ones for undergraduate and graduate lecture courses. The adjustment factors differ greatly [illegible] other instructional activities. The

Table 1

Comparisons of University One and University Two Basic Units and Adjustment Factors Related to Instructional Activity

	University 1		University 2	
Instructional activity (Numbers in parentheses = class code)	Basic unit	Adjustment factor	Basic unit	Adjustment factor
Undergraduate lecture (5)	Credit hours	1.0*	Credit hours	1.0
Repeat sections/undergraduate lecture	Credit hours	.75*	—	—
Graduate courses (5) lecture	Credit hours	1.5*	Credit hours	1.5
Honors sections/colloquia	Credit hours	1.5*	—	—
Repeat sections/graduate or honors	Credit hours	1.125*	—	—
Recitations (6)	Credit hours	.75*	300 students	.003
			400 students	.0025
Seminars	Credit hours	.75*	Credit hours	
			Undergraduate	1.0
			Graduate	1.5
Activity classes, clinics	Contact hours	.33*	Credit hours	1.3
			(Contact: credit 2:1)	
Laboratories (7 & 8)	Contact hours	.5*	Credit hours	
			(Contact: credit 2:1)	1.5
			(Contact: credit 3:1)	2.0
Independent studies (4)	Number of students (UG)	.167	Number of students (UG)	.02
Honors projects	(G)	.25	(G)	.028
Individual lessons (3)	Number of students		Number of students	
Undergraduate individual special study		.25		.02
Graduate individual special study		.33		.028
Individual processes (private music lessons)	—	—	Number of students	.028
Student teaching (2)	Number of students (UG)	.50	Number of students	
	(G)	.67	Supervision	.05
			Observation	.0125
Internships (2)	Number of students (UG)	.5	Number of students	.05
	(G)	.67		
Senior honor thesis	Number of students	.5	—	—
Ph.D. committee chairperson	Number of students	1.0	Number of students	.08
Ph.D. committee member	Number of students	.2	Number of students	.08
Master's thesis committee chairperson	Number of students	.5	Number of students	.028
Master's thesis committee member	Number of students	.2	Number of students	.028
Master's non-thesis committee chairperson	Number of students	.3	—	—
Master's non-thesis committee member	Number of students	.1	—	—
Practicum	—	—	Number of students	.08
Research/related activity	—	—	Number of students	.028
Undergraduate advisees	Number of students	.033	—	—
Committees	Number of committees	.67	—	—
Professional activities	Each FTEF	3.33**		
Related activities				3.0**
Average faculty load				
Direct instructional activity	Credit hours	9	Credit hours	9
Related instructional activity	Credit hours	4.33	Credit hours	3
Related professional activity	Credit hours	3.33	Credit hours	3
		16.66		15.0

*Adjustment factor is increased by course level and class size factor
**Assumed for each full-time equivalent faculty (FTEF)

basic units (credit hours, contact hours, or number of students) differ for activity classes and for clinics and laboratories. In addition, the adjustment factors at university 1 are increased for large classes at each course level.

Both formulas also include work-load units for related work load units for professional activity for each faculty member (3.33 for university 1 and 3.0 for university 2). Professional activity includes university and community services, professional development, and scholarly activities.

Both formulas also include work load units for related instructional activity (4.33 for university 1 and 3.0 for university 2). This activity includes student advising as well as committee and faculty meetings for planning educational programs.

The total number of work load units for each faculty member sums to 16.66 at university 1 and 15.0 at university 2. These respective work loads can be used to determine the number of faculty needed for the total instructional program. Each discipline or department calculates the number of work load units that result when the formula is used for each instructional activity. The total number of work load units is then divided by 16.66 at university 1 or by 15.0 at university 2.

Comparisons of the Applications of the Two Formulas

The School of Education and the College of Engineering provide the best example for comparing the results of the application of the two formulas for determining faculty work

Table 2

The University of Colorado at Denver
Comparisons of the College of Engineering and the School of Education
on the Five Measures of Faculty Work Load

	Equivalent Work Load		Credit Hours		Student Credit Hours		Contact Hours		Average Number of Students per Faculty Member (classes of + 1)
	University 1	University 2	Number	Percent of total	Number	Percent of total	Number	Percent of total	
Engineering faculty members									
1	25.3	24.5	25.5	6.2	513	8.9	25.5	8.3	26
2	21.55	23.03	22	5.4	501	8.7	24.5	8.0	21.55
3	25.36	22.29	30	7.3	480	8.4	25	8.2	30
4	23.06	21.17	32.5	7.9	213	3.7	22	7.2	13
5	19.5	21.04	20	4.9	538	9.4	25	8.2	38.5
6	22.08	19.73	39	9.5	351	6.1	25.5	8.3	24.7
7	24.57	19.04	49.5	12.1	355	6.2	29	9.5	22.5
8	18.18	17.13	18	4.4	495	8.6	16.5	5.4	33
9	15.16	16.06	21	5.1	520	9.1	20	6.5	32.75
10	17.00	15.22	34	8.3	232	4.0	16	5.2	17.5
11	15.79	13.66	28	6.8	310	5.4	17	5.5	26.9
12	13.78	13.16	36	8.8	380	6.6	18	5.9	36
13	13.80	13.00	13	3.2	372	6.5	13	4.2	28
14	9.49	12.09	22	5.3	155	2.7	19.5	6.4	28
15	10.82	9.61	19	4.6	330	5.7	10	3.3	42
Totals	275.44	260.73	409.5		5745		306.5		420.40
Education faculty members									
1	45.34	31.7	43	6.9	892	14.0	31	8.6	12
2	25.26	28.67	39	6.2	396	6.2	23	6.4	19.6
3	31.69	27.33	51	8.1	363	5.7	28	7.7	18.8
4	31.20	27.28	48	7.7	422	6.6	23	6.4	19
5	38.61	26.98	81	12.9	306	4.8	31	8.6	7.4
6	20.38	24.50	66.5	10.6	341.5	5.4	36.5	10.0	21.2
7	31.81	23.16	30.8	4.9	377	5.9	18.5	5.1	20.3
8	28.85	22.68	38	6.0	686	10.8	24.5	6.8	37
9	17.80	20.89	23	3.7	189	3.0	19.5	5.4	13
10	23.69	18.48	37	5.9	386	6.0	17.5	4.8	19.3
11	22.51	18.24	40	6.4	316	5.0	20.5	5.7	24
12	20.58	16.69	35	5.6	356	5.6	24	6.6	27.8
13	21.71	16.56	53	8.4	686	10.8	25	6.9	37.3
14	14.52	13.5	9	1.4	180	2.8	8.5	2.4	20
15	12.41	12.02	13	2.0	199	3.1	12.5	3.5	16.5
16	11.56	10.55	11	1.8	159	2.5	9.5	2.6	17.5
17	9.00	9.00	9	1.4	102	1.6	9	2.5	11.3
Totals	406.92	348.23	627.3		6356.5		361.5		342

load. Both formulas show a higher work load for education (Table 2). Education has a much larger proportion of graduate-level courses, and it has only upper division courses on the undergraduate level. Engineering has a predominantly undergraduate program. Consequently, the average work load of faculty members in education is increased by the larger adjustment factors used at the graduate level of instruction. This situation raises questions regarding the justification of the use of the larger adjustment factors at the graduate level.

The comparison of the results for engineering in the use of the formulas of the two universities reveals that there is a 14.7 difference in the total number of work load units, with the formula of university 1 producing the higher figure. The differential for education is 58.7, with the higher number of work load units also resulting from the university 1 formula. In the comparison of the effects of the two formulas in the production of the total work load units for education and engineering, there is a 131.5 difference when formula 1 is used and an 87.5 difference using formula 2.

These comparisons show that, both within a school-college and between schools-colleges, the formula of university 1 results in a higher number of work load units. This is due to the higher adjustment factors in that formula and the adjustment for large classes.

The Effect on Individual Faculty Work Loads of the Use of the Two Formulas

How well does each of the formulas compensate for the wide variances between two faculty members in their number of credit hours taught, contact hours, and student credit hours generated? Table 3 compares faculty members 7 and 9 in relation to their respective proportions of the total work load of the College of Engineering, using the five work load measures: credit hours taught, contact hours, student credit hours, formula 1 and formula 2 work load units. The results show that, whereas faculty member 7 ranks first in his or her percentage of credit hours and contact hours, faculty member 9 ranks eleventh and seventh respectively. On the other hand, faculty member 9 ranks second in student credit hours generated while faculty member 7 is ninth. Using the two formulas to calculate work

Table 3

The University of Colorado at Denver
Comparisons of Engineering Faculty Members Seven and Nine
on the Five Work Load Measures

Work Load Measure	Faculty Member 7		Faculty Member 9	
	Rank in college	Percent of college total	Rank in college	Percent of college total
Credit hours	1	12.0	11	5.0
Contact hours	1	9.5	7	6.5
Student credit hours	9	6.0	2	9.0
Formula 1 units	3	8.9	11	5.5
Formula 2 units	7	7.3	9	6.2

load units, faculty member 7 has 8.9 percent of the total college units resulting from the use of formula 1 and 7.3 percent using formula 2. Faculty member 9 has 5.5 percent of the total college units using formula 1 and 6.2 percent using formula 2. (Also see Table 4.)

The conclusion is that the formula for university 2 compensates more effectively for variances in the numbers of credit hours taught, contact hours, and student credit hours of faculty members 7 and 9 than does the formula of university 1. The conclusion is based on the 1.1 percentage point difference between seven and nine in their proportions of the total work load units of the college produced from formula 2, while there is a 3.4 point difference using formula 1. Justification for the conclusion that formula 2 compensates more effectively is evident from the following statistics that show for faculty member 7 the high number of credit hours taught and low number of student credit hours generated, contrasted for faculty 9 with the high number of student credit hours and lower number of contact and credit hours.

Conclusions

1. The input variables—credit hours taught and faculty contact hours—and the output variable—student credit hours—are not effective in providing comparable faculty work loads for the varied types of academic activity.

Table 4

The University of Colorado at Denver
Comparisons of Engineering Faculty Members Seven and Nine
on Number of Credit Hours Taught, Contact Hours,
and Student Credit Hours Generated

Work Load Measure	Faculty Member 7	Faculty Member 9
Credit hours taught	49.5	21.0
Contact hours	29.0	20.0
Student credit hours generated	355.0	520.0

2. The conceptual base of formulas that use adjustment factors to ascribe weights to differentiated types of activity appears sound. The results of the use of formulas reveal that they are effective in moving towards comparable work loads in varied types of academic activity and that they compensate for variations in the input and output variables of credit hours taught, faculty contact hours, and student credit hours produced.

3. The formula of university 2 compensates better than the formula of university 1 for the variances between faculty members 7 and 9 in Table 3 on the credit hour, contact hour, and student credit hour measures.

4. Though the conceptual base of the above formulas is sound, a great amount of work remains in providing adjustment factors that ascribe acceptable weights for producing comparable work loads for faculty in the varied disciplines. Some remaining questions are:

a. Should the adjustment factor for graduate-level instruction be greater than that for undergraduate instruction? If so, how much greater should the adjustment be and how may it be justified?

b. What is an acceptable adjustment factor for nonlecture types of academic activity, e.g., laboratories, internships, student teaching supervision, independent study, theses, etc.?

c. When should credit hours, contact hours, or number or students be used as a base unit related to adjustment factors?

d. How should faculty work load relate to unit costs (e.g., costs per student credit hour, costs per credit hour) in the allocation of resources for disciplines?

MEASURING FACULTY ATTITUDE TOWARD FACULTY DEVELOPMENT IN ACADEMIC PLANNING

Philip C. Winstead
Furman University

Furman University is currently engaged in a three-year project (September 1975–August 1978), with a grant from the W.K. Kellogg Foundation, to develop individual faculty members' skills in academic planning. The program in faculty development in academic planning is designed to extend to the Furman faculty the benefits of a successful management planning process employed by administrative personnel at the university for several years (Winstead, 1975).

Administrative Management Planning Program

The administrative management planning program stresses participative planning, improved communication, and the use of objective research in planning and decision making. The process is organized around data categories needed to provide information for decision making based on a trip analogy: Where are you? Where do you want to go? How do you get there? When do you want to go? Who is going with you? What will it cost? How do you know when you get there? These trip analogy questions provide a way to gather information and organize it, so that information will be available when and where it is needed for planning and decision-making purposes. The system provides a way in which purpose, goals, objectives, basic data, and other elements of systematic institutional planning can be integrated into ongoing administrative processes.

Academic Planning

Although the approach described has proven effective in the administrative atmosphere, it was realized that, until the efforts at Furman in systematic institutional planning included work with the faculty and in substantive academic areas, real benefit would not accrue to students in the classroom. Therefore, the move into a program in Faculty Development in Academic Planning was a needed follow-on. Among the objectives of the program are:

1. Develop and implement an ongoing institutional program for faculty development in academic planning.

2. Involve more faculty in the planning process and provide essential support services to faculty for planning

3. Make faculty more aware of innovative and successful academic programs in other colleges and universities

4. Increase the exposure of faculty to specialists in academic planning and to leading professionals in the various academic disciplines

5. Update and upgrade the expertise of faculty in systematic planning principles and procedures.

These objectives are laudable from the viewpoint of the administration of the university. But what are the attitudes of faculty toward systematic academic planning? Do faculty members see a need for training and development in academic planning? Do they see personal and professional weaknesses in themselves in an area such as this?

Evaluation Design

The evaluation design put forth in the proposal to the Kellogg Foundation for the Faculty Development in Academic Planning project included as a part of the research methodology an inventory or pretest of faculty attitudes toward the basic planning principles and procedures being contemplated as well as an assessment of faculty feelings toward the proposed program and toward their need for training and development in this specialized area. Also, the pretest was designed to determine whether or not the faculty members at Furman believed certain planning techniques being used in the administrative area were appropriate in traditional academic planning activities such as constructing new programs of study, developing new courses, devising new instructional strategies, and revising existing programs, courses, and procedures.

The inventory, or pretest, was developed during the fall of 1975 and administered in December of that year.[1] The survey was distributed to the 145 members of the faculty, and 105 (72 percent) responded. The instrument was divided into four parts: Part I, personal information; Part II, faculty members' present feelings about basic premises put forth in the original Kellogg proposal; Part III, information about faculty involvement in planning; and Part IV, opinions about the proper role of faculty.

Data Analysis

Responses to Part I revealed that the Furman faculty is an experienced faculty (three out of five of the respondents having been at Furman six years or more) with an average number (1–2) of committee task force assignments. Furman is on a three-term (12-8-12) academic calendar. Most faculty maintain a regular teaching load (24 semester hours per year) with each person normally teaching six courses (4 credit hour course base) per year or two courses per term.

To the 23 statements in Part II representing the underlying planning concepts stressed in the original Kellogg proposal, respondents were asked to mark one of the following responses: (1) agree strongly, (2) agree, (3) no opinion, (4) disagree, (5) disagree strongly. Nearly all of the faculty (96 percent) agreed or strongly agreed that a systematic approach to academic planning is imperative and that faculty members should be involved. Ninety-six percent responded that sound planning must be based upon a realistic understanding of the basic nature and capabilities of the institution. Three-fourths agreed or strongly agreed that planning helps clarify decision-making responsibility. Four out of five agreed that a planning program helps provide essential information when and where it is needed for decision-making purposes. Eighty percent said that the quality of planning and decision making cannot consistently rise above the quality of the information on which it is based. More than half (55 percent) approved of the use of outside consultants to help faculty members examine program alternatives. They considered usually helpful (1) visits to other institutions to examine innovative programs when considering and deciding upon possible courses of action and (2) special campus colloquia on pertinent topics to stimulate thought and generate ideas for improved academic efforts. Ninety-one percent agreed or agreed strongly that there exists in today's academic environment an interrelation of parts of the university and complexity of educational processes, organizational structures, and operation of colleges that requires systematic planning. More than nine out of ten (94 percent) agreed that acceptance and support of effective implementation requires the support of the key people who are involved or affected, and four out of five favored creation of conditions and provision for a planning process that will make it easier for every person involved to participate effectively. The majority (72 percent) agreed that planning is more effective when it takes place as close as practical to the point of eventual implementation, and 90 percent thought plans for each area must be coordinated with other areas to achieve the basic purpose and goals of the institution.

There were only three of the 23 statements listed with which a large number of faculty did not agree. About half (48 percent) did not agree that systematic planning will enable faculty to do a better job without additional time and effort on their part. Forty-four percent disagreed that many faculty members need specialized training in research, statistics, and other tools required for effective planning. On one statement, responses were almost equally divided; slightly more than half (51 percent) believed that the average faculty member does not have the necessary time or resources to engage effectively in planning. Some faculty members criticized Part II of the questionnaire as being general statements that were "loaded" and required definition of terms for accurate answers to be given.

Faculty members were asked to respond to the statements in Part III, about the Furman University climate for planning and decision making, using the same five-point scale (agree strongly to disagree strongly) used in Part II. In this section, there were six statements (out of 25) with which they agreed and none with which the majority disagreed. Opinions were split on the other 19 statements so as to make the results inconclusive.

Nine out of ten faculty members agreed that most faculty seem to be very loyal to Furman and are strongly committed to the acknowledged purpose and goals of the institution. They agreed (94 percent) that the faculty are serious and purposive about their work, and 90 percent thought that some are active in experimenting with new methods of teaching, new courses, and other innovations. The majority (70 percent) believed serious consideration is given to student opinion when policy and program decisions affecting students are made. Seven out of ten have found planning techniques such as the SWOTs Analysis (an acronym for strengths, weaknesses, opportunities, and threats) helpful in the planning process.[3]

Opinion was divided equally among those who agreed and disagreed that faculty morale is high at Furman and that there is an air of complacency among the faculty. Two out of five faculty members expressed the belief that proposed curricular changes are accepted or rejected more on the basis of financial consideration than on educational merit; two in five disagreed, and one in five had no opinion. There was division of opinion among faculty about whether attempts are made to involve in decision making individuals who will be directly affected or who are interested without regard to their formal position or hierarchical status. Opinions were divided equally among those who agreed, disagreed, or had no opinion as to whether laying plans for the future of Furman is a high priority activity for many Furman faculty members.

Part IV asked for faculty opinion concerning the proper role of the faculty in various planning and decision-making areas of the university from among the following responses: (1) decide alone, (2) decide jointly, (3) advise only, (4) no formal role, and (5) do not know. Only in the area of curriculum did a large percentage (44.8 percent) of the respondents believe that the faculty alone should make the plans and decisions; the majority (53.3 percent) thought plans and decisions in this area should be arrived at jointly. The largest numbers of faculty thought plans and decisions should be arrived at jointly in the following areas: (1) athletics, (2) budget allocations, (3) curriculum, (4) faculty appointments, (5) faculty status (policies), (6) faculty status (specific decisions), (7) faculty work load, and (8) student admissions. Two out of five believed that the faculty should advise only in the areas of administrative appointments and student financial aid.

Space was provided at the end of the questionnaire for faculty members to list the issues they felt were unresolved at Furman and required study and planning. A third of the respondents listed the role of intercollegiate athletics at Furman. Next most often mentioned (by 21 percent of respondents) were faculty concerns such as consistency (from one person or department to another) in the basis for deciding faculty load, salaries, tenure, responsibilities in and out of class, reward system, etc. Related were several questions such as what is expected of a "loyal" member of the faculty and what is the "faculty function."

Formative and Summative Evaluation

The survey results provided both formative and summative evaluation data. Formative evaluation is assessment during the course of an activity while there is still possibility of modification. Summative evaluation takes place at the end of an activity and deals primarily with the outcomes or end results (Bloom, Hastings, & Madaus, 1971, p. 20). As a formative evaluation device, these data provided the Kellogg project leadership with indications of receptivity toward various activities envisioned for the project. For example, minimal time was spent early in the project on general sessions designed to convince the faculty of the need for systematic planning or the faculty's role and responsibility in academic planning; the pretest indicated that Furman faculty already shared these views. Rather, early efforts highlighted basic planning principles and techniques and how these procedures are appropriate for academic as well as administrative planning efforts. Also, the pretest led the project leadership to emphasize the support services available for faculty involved in academic planning. Their desire and need for adequate time, secretarial support, consultants, and travel possibilities came through in pretest assessment. Moreover, the colloquia topics (e.g., faculty evaluation, general education, values, alternative teaching modes) were chosen based on the indications of need supplied by the responses to the survey instrument. Finally, the clear recognition by faculty of the complexity of educational institutions like Furman and the need for improved communications, especially in an area such as program planning, was taken into consideration by the project leadership as they managed and monitored the program.

These same pretest findings, used as baseline data, will aid in the summative evaluation at the conclusion of the project in 1978 by allowing the project evaluators to verify change over time. Not only is it expected that faculty members at Furman will be more proficient in planning and more knowledgeable about planning procedures but that they will also have more positive attitudes toward systematic academic planning and the need for coordinated faculty development in this specialized area of their professional job.

Conclusions

To date, 41 faculty members (from a teaching faculty of

145) representing 19 departments (out of 22 departments) have conducted, or are conducting, academic planning projects as a part of the Kellogg-supported program. In addition, nearly all of the Furman faculty have attended one or more of the colloquia, planning orientations, or other special activities associated with the Faculty Development in Academic Planning Program. The pretest survey has aided greatly, according to the project leadership, in the guidance and direction of the program. In addition to producing the baseline data needed for evaluation purposes, it has provided help in the selection and conduct of the specific activities which comprise the program and has given focus and direction to the project. The pretest has also been helpful as colloquia topics were chosen and program details were developed. But most importantly, the recognition of certain faculty attitudes toward faculty development in academic planning has been valuable in determining the thrust and day-to-day operation of the program.

Finally, the survey methodology of the pretest and the use of a series of statements requiring scaled responses produced data which were easily analyzed and could provide useful information for the program and project planning necessary for the Furman Faculty Development in Academic Planning Program.

Footnotes

[1] A copy of the survey instrument is available from Furman University's Office of Institutional Planning and Research.

[2] SWOTs Analysis is a procedure of self-analysis and needs assessment developed as part of the Furman University Management Planning Model for Liberal Arts Colleges developed under grants from The Ford Foundation and the Exxon Education Foundation (1972–75).

References

Bloom, B.S., Hastings, J.T., and Madaus, G.F. *Handbook on formative and summative evaluation of student learning.* New York: McGraw-Hill Book Company, 1971.

Winstead, P.C. *Furman University's management planning model for liberal arts colleges.* Final report to The Ford Foundation and Exxon Education Foundation, Greenville, South Carolina, 1975, 140 pp.

COMPARING EDUCATIONAL PROCESSES FOR IMPROVED STUDENT CHOICE*

Joan S. Stark
Judith M. Leahy
Jane E. Milley
Syracuse University

A recent impetus to provide more complete and accurate information to facilitate student choice among postsecondary institutions has stemmed primarily from new federal regulations which require institutions to supply such data as student retention rates and job placement rates to all applicants (Stark, 1976). These requirements have been based on the assumption that educational programs at institutions which have low retention and placement rates represent a poor investment of time and money for students generally. Colleges have strongly challenged this assumption, citing their diverse purposes, programs, and student bodies, and pointing out that students may make inappropriate inferences if such outcome measures are presented without careful interpretation (El-Khawas, 1977). In the study reported here, the investigators began with the assumption that informing students about educational processes which they can directly relate to their own situations may have more utility for improved choice than simple discrete facts about an institution. The purpose of the study was to determine if, in making hypothetical college choices, students who read descriptions of educational processes appear to relate material contained in these descriptions to their own self-reported educational needs.

Background

The investigators viewed information which might be disclosed to prospective postsecondary students as falling into one of the four categories illustrated in the diagram below.

	Students typically ask	Students typically do not ask
Considered important by educators	Cell A Easily comparable	Cell B ?
Not considered important by educators	Cell C ?	Cell D Comparability not essential

Diagram 1. Student information-seeking in college choice

Most recent efforts to improve information for student choice have focused on Cells A and C in the diagram, first determining what questions students typically ask and then attempting to supply the specified information (Kinnick and Lenning, 1977). Little attention has been given to other questions that students might ask if they were more fully aware of factors which might affect their education and were encouraged by educators to make careful self-assessments of their educational needs. It can be argued that educational institutions have an obligation to encourage students to ask questions which fall in Cell B in order to obtain all information which may be important to making an appropriate choice.

Based on this rationale, this study focused on two questions which students may not typically ask but which may directly reflect the nature of the educational program offered by a college or postsecondary school.

1. What types of services are available at the institution that will help me plan, select, and carry out learning activities which are appropriate in terms of my particular abilities, needs and interests? (For simplicity, such services will be referred to as *individualized academic programming*.)
2. What services does the institution provide which will assist me in planning a career in terms of my particular abilities, needs, and interests? (Such services will be referred to as *career planning services.)*

Students seeking answers to these two questions will need descriptive information which helps them determine what actions the institution is likely to take in regard to their education and development. Thus, the study was conducted in two phases: (a) an attempt to determine if comparative descriptions which provide answers to the two questions could be constructed across diverse postsecondary institutions; and (b) an attempt to determine the usefulness and salience of these comparative materials to students planning postsecondary study. This paper discusses only the second phase of the investigation; a discussion of the problems encountered in constructing comparative descriptions is reported elsewhere (Stark, Leahy and Milley, 1976).

Procedures and Samples

Questionnaires, college publications, and interviews with 129 administrators and faculty members at nine diverse institutions provided the data necessary to construct realistic comparative descriptions answering the two primary questions and several sub-questions. The investigators took special care to make the question-and-answer style descriptions as accurate and comparable as possible. Nevertheless, because of the diversity and inconsistencies among colleges, the descriptions sounded somewhat vague. This was particularly true for career planning services which were not a top priority at most of the institutions.

Four of the college descriptions[1] were used to investigate the following questions among college-bound high school students.

1. Will students who read informative materials about educational processes be stimulated to view the types of information discussed as more essential than if they had not read the materials?
2. What information items do college-bound students feel are most essential in making a choice among colleges?

---

*The authors gratefully acknowledge the support of the Fund for the Improvement of Postsecondary Education, HEW, Grant Number G00-75-03668. All opinions expressed are those of the authors and not of the funding agency.

3. Do students see the descriptive materials provided as useful in college choice? As clear and understandable?

4. Do students who view particular categories of information as important differ on self-reported academic or career counseling needs from those students who attach little importance to the same categories of information?

5. Are students likely to express a preference for an institution which describes services to meet their perceived academic and career counseling needs?

Random samples of college-bound juniors were drawn from three high schools, located in a suburban area, a small town, and a rural area.[a] One-third of the students were randomly assigned to a control group and two-thirds to an experimental group. Since not all students who were invited agreed to participate, the final samples are not necessarily representative of the high schools from which they were obtained. Usable responses were obtained from 45 students assigned to the control group and 83 students assigned to the experimental group.

About 80 percent of the students sampled planned to attend a public or private four-year college or university upon high school graduation; the remaining 20 percent planned to attend a public two-year college or vocational school. Eighty-six percent indicated one or more tentatively planned courses of study; 14 percent expressed total uncertainty about a career goal or college major. Over 80 percent of the students described their high school grades as mostly As or mostly Bs.

Students in the control group ($N=45$) were asked to rate the importance of twenty-five items of information pertinent to college choice and to contribute demographic information about themselves. Students in the experimental group responded to these same questions but only after first reading the four sample college descriptions: two dealing with academic programming and two with career planning services. Additionally, the experimental group completed an adjective check list to assess the usefulness of the information in each type of description, ranked the four unidentified colleges according to their personal preferences, and gave reasons for their choices.

Instruments

All instruments used in the study were constructed by the investigators. Students rated twenty-five items of information relevant to college choice on a four-point scale from (1) absolutely essential to (4) not at all essential. The items emphasized information in the sample college descriptions and omitted cost and financial aid opportunities, since this information is already known to be essential to college choice (Davis and Van Dusen, 1975).

Self-reported information provided a basis for classifying students according to degree of career certainty and self-assessed academic capabilities.

Students who read the four college descriptions reacted to each set—career planning services and individualized academic programming—on a separate 24-item adjective checklist patterned after one devised by Kelly, Pascarella, Terenzini, & Chapman (1976) for obtaining student reactions to course experiences. The stimulus for response was in the form "I found the information about (career planning services) to be . . .". Ratings were made on a four-point scale ranging from (1) extremely to (4) not at all.

Results

On the basis of chi-square analyses[a], the experimental and control groups were judged to be very similar in age, college plans, and other demographic variables. No significant differences were found between the two groups on such self-reported variables as reasons for planning to attend college, number of college catalogs previously read, number of exemptions expected from required college courses, amount of necessary extra academic help anticipated in college, difficulty experienced with high school course work, self-assessment of study skills, or degree of certainty about a career choice.

It was hypothesized that reading information about career planning services and individualized academic programming in the sample college descriptions would raise the consciousness of students about these issues. The experimental group was expected to rate related items on the Essential Information Scale as significantly more important than the control group which had not read the descriptions. The hypothesis was rejected; although seven of the twenty-five items were rated differently by the two groups of students, the items and the direction of the differences in mean ratings seemed to bear no relationship to the materials read by the experimental group. The items which differed significantly when t tests were used to compare group means are indicated in Table 1. Because no differences which could be attributed to reading the college descriptions were found between the experimental and control groups, the groups were combined for additional analyses.

The items of information most essential to college choice as judged by the high school students are displayed in Table 1 in order of importance. Students appeared to be most interested in course descriptions, quality of teaching, and job placement success records, as well as in various aspects of the college social environment. They were least interested in the college's attrition rate, the types of students who attend, and the extent to which students use the career planning services.

In order to reduce the number of information categories under consideration for examination of relationships between students' judgments of essential information, self-reported student demographic variables, and hypothetical college choices, responses to the Essential Information Scale were factor-analyzed by the principal components method with varimax rotation. Nine categories of intercorrelated items were represented by the nine factors which exhibited eigenvalues greater than 1.0. These nine factors accounted for 65.8 percent of the variance in the responses. Factor scale scores for each respondent were constructed by selecting the characteristic items (loading above .40) on each factor, summing the raw response scores for these items, and dividing by the number of variables summed. The items which comprised each scale and the characteristic factor loadings are given in Table 1. Coefficient alphas for the scales composed of more than two items ranged from .61 to .78. The results indicated that students see items of information about colleges as interrelated. Interestingly, several items originally included because the investigators had deemed them relevant to judging the adequacy of career planning services did not load substantially on any factor. It appears that students, much like the colleges themselves (Stark, et al.) did not see career planning as a total process related to their education. A high scorer on each of the nine scales would be described as follows:

Quality of teaching: This student considers information about the teaching processes of the college important, including ratings of academic quality.

Social environment: This student is concerned with the social dimensions of college, including living arrangements and student activities.

Counseling services: This student is interested in knowing about the counseling services available, both academic and nonacademic.

Rules and regulations: This student considers it important to know the ground rules at the college, both in academic and nonacademic areas.

Table 1

Ranking of Information Items in College Choice by 128 High School Students

Rank	Item	Factor scale	Factor loading
1	Detailed description of the courses offered in your field of interest	Course description	.67
2	Evaluation of the teaching of faculty members	Unnamed scale[c]	.50
3	Percent of students in your field of interest who got jobs in field	NONE[b]	
4	Description of student activities	Social environment	.54
5[a]	Description of living arrangements	Social environment	.70
6	Description of services to help you choose and plan a career	NONE	
7	Description of teaching methods used	Quality of teaching	.52
8	Description of social life on campus	Social environment	.66
9	Student ratings of academic quality	Quality of teaching	.60
10	Description of academic advising system	Counseling services	.53
11[a]	Extra help available for students in academic difficulty	Counseling services	.51
12	Advanced opportunities for students who do well	NONE	
13	Description of academic regulations	Rules and regulations	.68
14	Description of special counseling help	Counseling services	.68
15[a]	Physical description of the college	Social environment	.58
16	Amount of time professors spend with students out of class	Quality of teaching	.58
17	Opinions of enrolled students about campus life	Student opinion	.57
18[a]	Description of rules for student behavior	Rules and regulations	.67
19	How a student may register a complaint about an unfair academic decision	Academic concern	.68
20	Career interests of enrolled students	Unnamed scale	.52
21[a]	Information about internship opportunities	NONE	
22[a]	Description of types of students who attend	NONE	
23[a]	Percent of students who plan to enter a profession	Professional orientation	.72
24	Percent of students who use the career planning office	NONE	
25	Percent of students who left the school before finishing their program of study	Student opinion	.60

[a] For the seven items with this superscript, a significant differnce ($p < .05$) was found between students in the control group ($N=45$) and those in the experimental group ($N=83$) who had read college descriptions. For items ranked 11, 21, and 23, the difference in mean rankings was in the opposite direction from that hypothesized.

[b] The indication NONE under a factor scale means that the item did not have a substantial loading on any of the nine factors extracted.

[c] The Unnamed Scale is explained in the text. It consisted of two items which did not appear to be conceptually linked.

Professional orientation: This student considers it important to know the percent of students who plan to enter a profession.

Student evaluation of teaching/student career interests: Students who score high on this scale consider the two items of information named in its title as important. It was unclear to the investigators why these two items were related, thus, it is termed the Unnamed Scale.

Academic concern: This student believes that it is important to know what will happen to him/her if academic difficulties are encountered—both what help is available and how to complain if academic evaluations seem unfounded or unfair.

Student opinion: This student is interested in the opinion of other students about the college, as expressed in surveys and implicitly in the attrition rate of the student body.

Course descriptions: This student considers it important to have detailed descriptions of courses and programs.

Using these factor scales, students ($N=128$) were classified into three groups according to their scores. Students who scored one standard deviation or more above the mean of the total group were classed as high scorers, that is, those who considered the particular kind of information most essential in college choice. Similarly, low scorers were students who scored one standard deviation below the mean on each scale, while the remaining group of students, within one standard

Table 2

Number of Students Classed as High, Medium, and Low Scorers on Each Information Importance Scale

Factor scale	High importance[a]		Moderate importance		Low importance	
	Range of scores[b]	Number of students	Range of scores	Number of students	Range of scores	Number of students
Course descriptions	< .75	26	.75–1.70	102	> 1.70	0
Teaching evaluations/ student career interests	< 1.24	12	1.24–2.52	96	> 2.52	20
Social environment	< 1.27	23	1.27–2.37	75	> 2.37	30
Quality of teaching	< 1.32	22	1.32–2.54	93	> 2.54	13
Academic concern	< 1.33	9	1.33–3.10	89	> 3.10	30
Rules and regulations	< 1.34	24	1.34–2.83	83	> 2.83	21
Counseling services	< 1.37	18	1.37–2.49	83	> 2.49	27
Professional orientation	< 1.56	14	1.56–3.33	94	> 3.33	20
Student opinion	< 1.88	26	1.88–3.28	89	> 3.28	13

[a] Classification was made on the basis of ± one standard deviation.

[b] A score of 1 indicates that students felt the type of information was essential; a score of 4 indicates they viewed the information as not at all essential.

Table 3

Relation of Self-Reported Student Characteristics to Types of Information Students View as Essential[a]

Factor scale	Reason for college	Have read catalogs	Study skills	Prepared for college	Will need help	Will exempt courses	School work difficult	High school GPA
Course descriptions								
Unnamed scale						X		
Social environment	X						X	
Quality of teaching		X						
Academic concern								
Rules and regulations[b]								
Counseling services								
Professional orientation[c]			X	X	X			
Student opinion[b]							X	

[a] X indicates that students who felt the type of information on the scale was very essential or not at all essential differed significantly ($p < .05$) on the self-reported characteristic.

[b] Students who felt the type of information on these scales was highly essential preferred College B.

[c] Students who felt the type of information on this scale was not at all essential preferred College B.

deviation of the mean, were classed as moderates. It is clear from examining these classifications in Table 2 that some categories of information (e.g. course descriptions) are considered essential by all students. For other categories, students may judge the importance of information in very different ways. For example, 11 percent of the total group of students considered knowing what portion of enrolled students planned professions as extremely essential, while 16 percent considered it relatively unimportant.

Scale scores of the three groups on each of the scales were cross-tabulated with the various self-reported student characteristics and the chi-square statistic calculated for each table to explore the question Do students who view particular categories of information as important differ on self-reported characteristics from students who attach little importance to the same information?

Statistically significant differences ($p < .05$) between high and low scorers are noted in Table 3. The most frequent differences were found on the single item scale which was termed "professional orientation" and which had been judged as only of moderate importance by students generally ($X = 2.44$). Those students with less developed skills, with poorer preparation for college, or who felt that they would need help with class work, saw information about the portion of the student body planning to enter professions as most important. Students who viewed descriptions of the social environment as highly important tended to be those who had experienced the most difficulty with course work in high school or those who had either social/personal or vocational reasons for college attendance. Students who cited intellectual/artistic goals as their primary reason for attending college saw descriptions of the social environment as much less important.

In less easily interpreted differences, students who had read fewer college catalogs saw information concerning quality of teaching as most important; students who thought they would be eligible to exempt required courses saw as most important the items on the two-item scale which included evaluation of faculty and career interests of students.

Since items relevant to career planning did not emerge on any of the factor scales, a separate analysis was conducted to determine whether students who were "certain of career choice" ($N = 22$) rated these information items as more important than those who were "uncertain or somewhat uncertain of career choice" ($N = 100$). Two significant t tests ($p < .05$) were found between these two groups on related items; students who were uncertain about career choice rated the information about career services and information about job placement percentages as more important.

Table 4

Ranking of Colleges by High School Students ($N = 83$) Who Read Comparative Descriptions

	Most preferred[a]	Least preferred
College A[b]	37.3	25.3
College B	28.9	12.0
College C	22.9	14.5
College D	7.2	45.8

[a] In percent of total group responding.

[b] Descriptions of Colleges A and B focused on individualized academic programming; description of Colleges C and D on career planning services.

Students in the experimental group who read the four college descriptions reacted favorably; more than 50 percent of the students found the descriptions to be useful, complete, clear, practical, relevant, and essential. Less than 50 percent found them complex, familiar, strange, or confusing. But students did not see the materials as stimulating, challenging, or enlightening and tended to see them as more boring than interesting. The career planning services descriptions were viewed less positively than the descriptions of individualized academic programming. Only 50 percent viewed career planning as essential as compared to 75 percent for academic programming.

Students in the experimental group were asked to rate the college descriptions from (1) most preferred to (4) least preferred according to which school appeared to best meet their needs (see Table 4). It appears that College D, which described only career planning services (relatively undeveloped on that campus), was least favored by students. A one-way analysis of variance was used to compare high, moderate, and low scorers on each information scale with the college choices. An explanatory pattern, based on significant differences, could be detected only for College B. College B was favored by students who scored low on Professional Orientation, high on Rules and Regulations and high on Student Opinion. College A is a state college; College B is a private liberal arts college noted for individualized programs and few rules which apply to all students. Although no firm information is available, College B is considered by the public to be at least as academically demanding as College A. The reasons students gave for preferring a given college were helpful in interpreting patterns of preferences between the descriptions of academic programming at these two colleges.

Many students chose College A because they felt it was a school with extremely high academic standards. Other students stated specifically that they did not choose College A because they preferred an institution with less intense academic pressure. Students with social goals for attending college, as well as those who experience some academic difficulty, chose College B primarily to avoid an intense academic atmosphere. The different views appeared to be based on the explicitness of the policies described. For students who sought a flexible atmosphere, including those who considered knowledge of rules and regulations as very important, College A was seen as stuffy and formal because of its specific policies. College B was seen by many as liberal, not too academically oriented, and, therefore, more fair, personalized, and flexible. Conversely, however, some students believed that because College A had more explicit policies, students would be likely to get a fair deal.

College B was also described, in terms of its career planning services, as College D. It was clear that students were not attracted to the college when it was described in this limited way. College C, a state college for which career planning services were also described, was more frequently preferred. Several students selected College C on the basis of a perceived need for its fairly well-developed career planning program. More often, students preferred College C because it appeared to offer programs they desired.[4] As a group, students judged course descriptions as most essential information, and many selected College C as the only description which provided this information.

Although the descriptions were carefully planned and phrased to present information which related closely to the two main questions asked, students commonly made inferences which went far beyond what the investigators believed could legitimately be inferred. For example, comments were made that "the faculty and students seemed enthusiastic," "the college gives the student a better chance to get in," "seems to be more concerned with good education as seen through tough grading policies," "it sounds like because of the strict rules they should get good results," "doesn't sound so strict and full of discipline," and "offered good extracurricular activities."

Discussion

A relatively small sample of students, not necessarily representative of all high school students, and including no adult prospective postsecondary students, was used in this study. The college descriptions used, while real, focused on only two types of information and omitted much data which students normally would use in making a college choice. The items of information judged by students were selected to obtain rankings related to the college descriptions provided rather than to represent the universe of all possible information items. Simple univariate statistics were used without controlling for potential contaminating variables. For all these reasons, this study should be interpreted as an initial exploration, and the discussion of results should be considered in that light.

It has been argued that types of information actually supplied by colleges set the norm for what students will view as important in college choice. Although most students in this study had not yet read many college catalogs, they had formed some views about what information was essential. Students who read brief descriptions of academic programming and career planning services at four colleges did not readily adopt the view of the investigators that these services were of high importance. If educators wish to influence students to make choices on the basis of variables they view as important in terms of students' educational needs, a more intensive and long-term approach will be needed.

While 80 percent of the students in this study were interested in a steady, secure job as a result of college attendance, and most of them had only tentative ideas of what that job might be, they did not view career planning as an essential college service. Students were more interested in placement rates for their tentative program choices. The career planning descriptions tended, however, to be vague, like the programs they described, rather than clear and convincing. If colleges argue that placement rates are inappropriate because students are undecided and likely to change career plans, they may have to present a strong case to students that a career planning service integrated into the educational program is more essential.

Some relationships were discovered between self-reported developmental characteristics of students and the information which the students viewed, in the abstract, as most essential for college choice. These relationships were not, however, necessarily in the direction which educators might consider desirable. For instance, many students who admitted that they would need academic help, and who felt less than well prepared for college, seemed likely to choose a college which they perceived to have low academic press rather than one with helpful services. Students whose primary reason for attending college was social tended to be most interested in the college's social environment. In contrast, students who were more academically self-assured, and whose goals were intellectual, seemed likely to look for a college with high academic press and a high portion of students planning to enter the professions. While this is not new information, colleges may want to consider whether the stress on the social environment found in many college catalogs serves to attract the type of student in which they are most interested.

The evidence obtained through open-ended responses made it very clear that students will read additional information into college descriptions even when great care is taken to assure that the descriptions are objective and cautiously limited. In making hypothetical choices among colleges, students seemed to judge less frequently by the specific information presented than by images they developed of the unidentified college's academic or social climate. Furthermore, different students arrived at opposite inferences from the same descriptions. Some students equated fairly detailed academic policies at College A with high academic press, others as evidence of potential fair practice, while still others equated explicit policies with undesirable rigidity. While colleges have objected to presentation of raw statistics on the basis of possible misinterpretation, there is reason to believe that students will misinterpret material normally found in college catalogs—which is not dissimilar except in detail and focus from that presented in this study. Apparently students look for specific (and varying) types of information closely related to their goals for attending college and their self-perceived characteristics, and they make their choices on that basis, ignoring other potentially conflicting information. Institutions might wish to experiment with describing their services through characterizations of what actually happens to particular types of students in the educational process, rather than presenting average information geared at everyone and, therefore, at no one.

This type of research should be extended to a larger and more diverse sample of students with a more tightly controlled experimental design to learn more about how student self-perceived educational needs, college goals, and information supplied by colleges interact. Under present conditions, despite federal information mandates, if the student is playing a guessing game through unwarranted inferences about college opportunities, he or she is likely to guess wrongly about as often as rightly.

Footnotes

[1] Proprietary school descriptions were eliminated for testing purposes because their descriptions made them easily identifiable.

[2] Two urban high schools were invited to participate but declined because of time pressures.

[3] Details and statistics not reported are available from the senior author.

[4] The researchers had been unable to edit out program clues and still adequately describe the career planning services.

References

Davis, J., and Van Dusen, W. *A survey of student values and choices*. Unpublished study conducted for the College Entrance Examination Board, Brookdale, California, 1975.

El-Khawas, E. *Better information for student choice: Report of a national task force*. Washington, D.C.: Fund for the Improvement of Postsecondary Education, Department of Health, Education and Welfare, March, 1977.

Kelly, E.F., Pascarella, E.T., Terenzini, P.T., and Chapman, D. *The development and use of the adjective rating scale: A measure of attitude toward courses and programs*. New York: Syracuse Universtiy, Center for Instructional Development, April, 1976.

Kinnick, M.K., and Lenning, O.T., The information needs of prospective students. Unpublished paper prepared for the National Task Force on Better Information for Student Choice. Washington, D.C.: Fund for the Improvement of Postsecondary Education, Department of Health, Education and Welfare, 1977.

Stark, J. (Ed.) Promoting consumer protection for students. In *New Directions for Higher Education*. San Francisco: Jossey-Bass Inc., 1976.

Stark, J., Leahy, J., and Milley, J. *Comparing educational processes for improved student choice* (Report to the National Task Force on Better Information for Student Choice). New York: Syracuse University, Department of Higher/Postsecondary Education, 1976.

THE RELATIVE IMPORTANCE OF INITIAL STUDENT CHARACTERISTICS AND THE FRESHMAN EXPERIENCE OF COLLEGE IN VOLUNTARY ATTRITION*

Patrick T. Terenzini
Syracuse University
Ernest T. Pascarella
University of Illinois at Chicago Circle

As examination of the attrition research literature will reveal, the vast majority of studies of this type are primarily descriptive ones, identifying correlational relationships between attrition and a wide variety of demographic, sociological, psychological, and social psychological attributes of students, as well as various institutional characteristics. Far fewer studies, however, proceed from some conceptual statement seeking to explain the relationships among these variables and students' decisions to withdraw or remain at any given institution.

Kamens (1971) theorized (and collected evidence indicating) that larger institutions, with their various graduate and professional programs, as well as their broad networks of contacts with alumni in the business and professional communities, offered students greater opportunities for entry into career and social positions outside the academic professions than did smaller institutions and would, consequently, generate a stronger desire among students to remain and take advantage of these opportunities.

Rootman (1972) developed an interactional theory, positing that student-environment "fit" is based on the degree to which the student is socialized into the general academic and social fabric of an institution and on the degree to which his other values and orientations are shared by the primary peer group. Cope and Hannah (1975) also conceive of the sources of attrition as being a function of the quality of the student-institution "fit."

The most comprehensive and explicit theories of attrition have been advanced by Spady (1970, 1971) and Tinto (1975), both of whom view the degree to which a student is integrated into the social and academic systems of an institution, and the student's interaction with these systems, as the primary determinants of persistence. Both of these theories specify a role for such antecedent attributes as a student's precollege dispositions, interests, attitudes, and skills, as well as the student's interaction with environmental characteristics of the institution he or she attends.

Spady's conceptualization of attrition lies in the domain of social integration, but Tinto theorizes an approximate parity between the interacting influences of integration in both the social and academic systems of an institution. According to Tinto:

> Given individual characteristics, prior experiences, and commitment, . . . it is the individual's integration into the academic and social systems of the college that most directly relates to his continuance in that college . . . Other things being equal, the higher the degree of integration of the individual into the college system, the greater will be his commitment to the specific institution and to the goal of college competition. (1975, p. 96)

We have reported a study (Terenzini & Pascarella, 1977) which tentatively confirms the principal elements of Tinto's theory. It was found that variable sets operationalizing the two concepts of social and academic integration could independently differentiate between stayers and voluntary leavers. We also found that when two variable sets were entered together into a stepwise discriminant analysis, the relative contributions to the separation of the groups by the variables comprising each set indicated that academic and social integration were, as Tinto's theory specifies, approximately equally important.

That study was limited, however, by the fact that it was cross-sectional and the sample size was not sufficiently large to include in the main analyses available data on students' background characteristics. Consequently, there was no way of knowing whether the stayers and leavers in the study differed at the time of matriculation on any of the variables employed in the main part of their analyses.

The present study has sought to determine the degree to which students' behaviors and perceptions of the *reality* of their college experience could differentiate between students who withdrew voluntarily after one year and those who did not. This was to be determined after taking into account certain possible prematriculation differences between leavers and stayers.

This study is limited in at least two ways: first, subjects have been drawn from a single institution, and second, the preregistration data for the study did not include such potentially important predictors as students' social and economic attributes, high school achievement, or precollege commitment to obtaining a degree—all of which may influence subsequent patterns of social and academic integration and interaction.

Methodology

Design and sample. The study, conducted at Syracuse University, was longitudinal and ex post facto. Syracuse is a large, private university in central New York with a total undergraduate enrollment of approximately 10,000 students (2,400 of whom were freshmen at the time of the study). In July 1975, a simple random sample, made up of 1,008 persons who had expressed their intention of enrolling in the fall as Syracuse freshmen, were sent a questionnaire asking them to report their expectations of a variety of aspects of the college experience. Usable responses were received from 766 students (76.0%) who subsequently enrolled. In March of the following year (approximately mid-way through these students' second semester), a second questionnaire was mailed to the same 766 students seeking information on their perceptions of the reality of their college experience. Usable responses were received from 536 freshmen (70.0%; 53.2% of the original sample). Of these 536, however, 192 had incomplete data on one or more of the variables used in the study and, consequently, they were not included in the analyses. Thus, the findings reported here are based on complete data available for 344 freshmen. Of these 344, 55 had voluntarily withdrawn from the university at or before the end of their freshman year and are identified here as leavers. Of the 289 stayers, 196 (approximately two-thirds) were randomly selected for the main data analyses. The remaining 93 stayers were withheld from these analyses and, subsequently, were used in a partial cross-validation procedure described later. Statistical tests indicate that the 344 subjects in this study are representative of the Syracuse freshman population with respect to sex and college of enrollment.

---

*The authors wish to acknowledge the able assistance of James Hibel in the preparation and analysis of the data for this study.

Instruments. If a student is fully integrated into the social and academic systems of an institution, then, presumably, that individual will have more positive perceptions of those two dimensions of the institutional environment, participate more extensively in extracurricular activities, perform at a higher level of academic achievement, be more committed to obtaining a degree, and be more confident that his or her decision to attend this particular institution was a good one than will a less fully integrated student.

To assess levels of normative integration in the academic system of the university, subjects were asked to indicate their expectations (and later their perceptions) of their academic program and how important it was to them to graduate (on a scale from 1 = Extremely Important to 4 = Not at All Important). Structural integration in the academic system was indexed by a student's year-end cumulative grade-point average, an indicator specifically identified in the model (Tinto, p. 92).

Assessments of subjects' integration in the social system of the university were based on students' expectations and perceptions of their nonacademic lives, the number of extracurricular activities in which they expected to spend (and the number in which they actually did spend) at least two hours per week on the average, and the number of times they expected to (and did) interact informally with faculty members outside the classroom for ten minutes or more. Clearly, informal interaction with faculty members may well comprise both academic and social dimensions. Tinto acknowledges that fact (p. 109), but he nonetheless places interaction with faculty clearly within the social integration portion of his conceptual scheme (p. 95), and, for that reason, interaction was treated accordingly in the present study.

Subjects were also asked, as a general index of their integration into the institutional systems, to report the level of confidence they had that their decision to attend Syracuse University was a good one (on a scale from 1 = Definitely Right Choice though 3 = Not Sure to 5 = Definitely Wrong Choice).

As a measure of their expectations (and later of their perceptions) of their academic program, students were asked to rate the statement I (EXPECT/HAVE FOUND) MY ACADEMIC PROGRAM AT S.U. TO BE on the Adjective Rating Scale (ARS) developed by Kelly, Pascarella, Terenzini, and Chapman in 1975. The ARS was also used by subjects to respond to the statement I (EXPECT/HAVE FOUND) MY NONACADEMIC LIFE AT S.U. TO BE. The ARS consists of twenty-four adjectives (e.g., good, enjoyable, demanding, boring, useless, practical, interesting) against which the respondent rates certain statements by using a four-point scale (1 = Extremely, 2 = Very, 3 = Somewhat, 4 = Not at All). Information on the reliability and validity of the ARS is available in Kelly et al.

Additionally, scores were available for the subjects in this study on both the quantitative and verbal portions of the Scholastic Aptitude Tests (SATs) and the four areas of Stern's (1970) Activities Index (AI): achievement orientation, dependency needs, emotional expression, and educability.

Analysis. Data analysis began with a principal components analysis of subjects' ARS "expectations" responses. A similar analysis was performed on their "perceptions" responses. Separate analyses were done for each of the four statements (two preregistration, two post-registration). Following Kaiser's (1959) criterion, components with eigenvalues greater than 1.0 were extracted and subjected to varimax rotation. The rotated components will hereafter be referred to as factors.

As suggested by Armor (1974), mean factor scales were computed for each respondent by summing the raw scores on variables with rotated factor loadings of .40 and above on a particular factor and dividing by the number of variables. Where a variable loaded above .40 but lower than .50 on two dimensions, it was dropped from the computation of factor scales.

Such a procedure may result in the loss of orthogonality and lead to substantial inter-scale correlations. We judged, however, that it would be preferable to optimize the internal consistency reliability of each scale (a product of this scaling procedure), despite the potential loss of orthogonality, since the latter situation can be dealt with effectively by employing discriminant function analysis which takes the inter-scale correlations into account.

To assess differences between the groups, with respect to their actual experiences of college, while controlling for any initial differences between the two groups, a multiple regression analysis was first performed and residual post-registration variable scores were computed. Those post-registration variables having a counterpart in the prematriculation data collection were regressed on the corresponding preregistration variable, the student's sex, academic aptitude (combined SAT score), personality characteristics (AI Area scores) and each parent's level of education. Those post-registration variables with no counterpart in the preregistration data collection (i.e., importance of graduation, confidence that the decision to attend S.U. was a good one, and cumulative grade-point average) were regressed on sex, academic aptitude, personality characteristics, and parents' levels of education.

This procedure involved making a prediction of a subject's post-registration score for a given variable, based on that subject's initial characteristics and expectations. For each variable, the predicted value was subtracted from the observed value to obtain a residual score. In brief, any differences found between the groups on the residualized, post-registration variables cannot be attributed to initial group differences on any of the variables used to calculate the residuals.

The standardized residuals were then used as the predictor variable scores in a two-group stepwise discriminant function analysis to determine whether students' actual experience of college, independent of their initial characteristics, could differentiate between those who voluntarily withdrew from the university after one year and those who continued into their sophomore year.

Finally, a partial cross-validation procedure, using the 93 known stayers who had not been included in the discriminant analysis, was carried out. This procedure serves as a check on the discriminating power and stability of the function and as an index of the degree of overlap between the two groups.

Results

The factor analysis of students' ARS ratings of their expected academic programs and expected nonacademic lives yielded five factors with eigenvalues greater than 1.0 in both instances. The factor analyses of students' actual perceptions of their academic programs and nonacademic lives yielded struc-

Table 1

Varimax Rotated Factor Loadings for
Students' Adjective Rating Scale Responses*

I expect/have found my academic program at S.U. to be: Factor	Loading	I expect/have found my nonacademic life at S.U. to be: Factor	Loading
Affective appeal		*Affective appeal*	
Exciting	.78	Exciting	.77
Enjoyable	.76	Enjoyable	.75
Enlightening	.69	Good	.72
Stimulating	.59	Interesting	.65
Different	.56	Stimulating	.64
Provocative	.40	Enlightening	.58
Alpha reliability = .83		Alpha reliability = .94	
% variance = 13.52%		% variance = 17.98%	
Practical value		*Practical value*	
Valuable	.73	Relevant	.66
Worthwhile	.65	Practical	.66
Practical	.64	Valuable	.61
Necessary	.60	Worthwhile	.59
Informative	.55	Informative	.57
Relevant	.52	Necessary	.47
Good	.42		
Alpha reliability = .92		Alpha reliability = .90	
% variance = 13.8%		% variance = 12.95%	
Dullness/apathy		*Dullness/apathy*	
Boring	.80	Boring	.80
Dull	.72	Dull	.75
Irrelevant	.64	Irrelevant	.58
Alpha reliability = .80		Alpha reliability = .98	
% variance = 9.71%		% variance = 8.41%	
Difficulty		*Demand/challenge*	
Difficult	.82	Demanding	.76
Demanding	.79	Challenging	.69
Challenging	.67	Difficult	.66
Alpha reliability = .87		Alpha reliability = .84	
% variance = 8.1%		% variance = 8.12%	
Negative elements		*Negative elements*	
A waste	.73	Useless	.79
Useless	.72	A waste	.70
General	.47	General	.56
Alpha reliability = .67		Alpha reliability = .63	
% variance = 6.59%		% variance = 7.61%	
Total variance explained = 51.7%		Total variance explained = 55.1%	

*The complete factor matrix and related information are available from the authors upon request.

tures which were highly similar to those obtained in the analyses of the expectations data. For this reason, and in order that the pre- and post-registration data would be comparable, the factor structures of students' preregistration responses to the two concepts were used in the computation of factor scale scores for both pre- and post-registration responses.

The compositions of the factor structures for the two statements are given in Table 1. Each factor has been given a tentative name which was felt to represent the underlying construct tapped. The reader is cautioned, however, against attributing surplus meaning to the factors beyond the variables which characterize them.

Table 1 also shows the alpha, or internal consistency reliability, coefficients computed for each set of factor scales, as well as the percentage of explained variance accounted for by each factor. Because the fifth factor for each analysis had an alpha coefficient of less than .70, these two factors were dropped from all further analyses as insufficiently reliable.

Table 2 arrays the raw scores and standard deviations, as well as the residualized scores and standard deviations for the two groups on the thirteen post-registration variables. The univariate F-ratios for differences between residualized group means on each of the variables are also reported. The multivariate analysis of variance for the thirteen residual scores yielded an F-ratio of 4.184 ($d.f.$ = 13 and 237), statistically significant at $p < .001$. The canonical correlation of the predictor variables with group membership was .43.

For the eight ARS scales,as well as for the importance of graduating and sureness SU right choice variables, a negative residual represents more of a given attribute than was predicted, whereas a positive residual reflects less. For the number of faculty contacts, number of extracurricular activities, and grade-

Table 2

Raw Score and Residualized Means and Standard Deviations and Univariate *F*-Ratios[a] for Residualized Scores

	Raw scores				Residualized scores				Univariate *F*
Variable	Stayers (n=196)		Leavers (n=55)		Stayers (n=196)		Leavers (n=55)		for
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Residuals[a]
Affective appeal (Academic program)	2.58	.51	2.94	.55	−.01	.89	.60	.95	19.471***
Dullness/apathy (Academic program)	3.25	.53	3.22	.50	−.06	.94	−.08	.81	.022
Practical Appeal (Academic program)	2.27	.57	2.54	.56	.02	.93	.42	.90	8.285**
Difficulty/challenge (Academic program)	2.33	.60	2.59	.65	−.04	.90	.40	1.00	9.903**
Affective appeal (Nonacademic life)	1.96	.68	2.21	.72	−.07	.91	.30	.95	7.094**
Difficulty/challenge (Nonacademic life)	2.77	.79	2.92	.71	−.15	.99	.12	.92	3.390
Practical appeal (Nonacademic life)	1.97	.60	2.12	.67	−.08	.90	.21	1.00	4.271*
Dullness/apathy (Nonacademic life)	3.50	.66	3.44	.52	.01	1.10	−.08	.82	.349
No. of contacts with faculty	10.94	14.92	4.62	3.99	.08	1.16	−.39	.37	8.718**
No. of extracurricular activities	2.00	4.53	1.14	2.91	.04	1.15	−.11	.75	.888
Cumulative grade-point average	2.80	.64	2.65	.71	−.02	.89	−.20	.98	1.739
Importance of graduating	1.34	.63	1.65	.91	−.08	.91	.38	1.32	8.849**
Sureness SU right choice	2.17	.97	2.82	1.35	−.08	.91	.57	1.26	17.768***

[a] Degrees of freedom = 1 and 248.

Note: The ARS is scored from 1 = Extremely to 4 = Not at All. Thus, on the affective appeal factors for example, lower scores are more positive. Similarly, a lower score on both the importance of graduating and sureness SU right choice scales is more positive than a higher one.

*$p < .05$ **$p < .01$ ***$p < .001$

point average, the reverse is true. This curious situation is a function of the meaning of the scale units and the method of calculating residuals.

Table 3 shows the order in which the thirteen predictor variables entered the analysis, the amount of change in Rao's V statistic attributable to each (an index of the incremental contribution to group separation made by a variable when it enters, given those variables already in the analysis), and the standardized discriminant weights. These weights, which indicate a given variable's relative contribution to group separation, and the amount of change in Rao's V were used in making judgments about which variables were the most important in separating the two groups.

These indices suggest that the amount of affective appeal and dullness/apathy respondents found in their academic programs were the two largest contributors to the discrimination between the groups, stayers reporting both more emotional attractiveness and less dullness in their academic programs than leavers. These two variables were followed closely in importance by a respondent's confidence that his or her decision to attend SU was a good one and by the amount of reported informal contact with faculty members outside the classroom.

Interestingly, and perhaps revealingly, neither cumulative grade-point average nor any of the social integration variables made significant contributions to separating the groups after taking into account a respondent's sex, academic aptitude,

Table 3

Results of Stepwise Discriminant Analysis of Residualized Scores

Step	Variable entered	Change in Rao's *V*[a]	Standardized discriminant weight
1	Affective appeal (Academic program)	19.47***	−.51
2	Sureness SU right choice	7.91**	−.41
3	Dullness/apathy (Academic program)	12.02***	−.50
4	No. of contacts with faculty	7.00**	.37
5	Importance of graduating	3.89*	−.24
6	Difficulty/challenge (Academic program)	3.15	−.25
7	Affective appeal (Nonacademic life)	1.64	−.23
8	Cumulative grade-point average	.99	.13
9	Practical appeal (Nonacademic life)	.33	.10
10	Practical appeal (Academic program)	.24	.10
11	Difficulty/challenge (Nonacademic life)	.21	−.07
12	Dullness/apathy (Nonacademic life)	.18	.06
13	No. of extracurricular activities	.10	.04

[a] Indicates incremental contribution to discrimination, given those variables already in the analysis.

*$p < .05$ **$p < .01$ ***$p < .001$

personality characteristics, and parents' levels of education.

The results of the classification analysis show that 74 percent of the stayers, 64 percent of the leavers, and 73 percent of the partial cross-validation stayers (withheld from the main analysis) were correctly classifed. In the case of the cross-validation group, chance alone should result in the correct classification of half of the cases; the 73 percent correctly classified represents a significant improvement on chance ($p < .001$). While this finding indicates moderate stability in the function, it also represents (as does the moderate canonical correlation) that some overlap exits between the two groups.

Discussion

A number of student background characteristics presumably mediate the degree to which the student becomes socially and academically integrated into the institution. Tinto theorized that, "Other things being equal, the higher the degree of integration . . . the greater will be (the) commitment to the specific institution and to the goal of college completion" (p. 96).

In a test of Tinto's theory, and after initial differences due to sex, academic aptitude, personality characteristics, parents' education and preregistration expectations had been statistically controlled, stayers in this study, as compared with leavers, rated their academic programs higher on a factor labeled affective appeal and lower on a factor termed dullness/apathy. They also reported more frequent contact with faculty members outside the classroom and had more confidence that their decision to attend Syracuse University was a good one.

Although Tinto's model gives approximately equal weight to students' background characteristics and their interaction with the institution's social and academic systems, the findings of this study suggest that what happens to a student after he or she matriculates may have at least as great an influence (if not a greater influence) on subsequent attrition-related decisions as initial expectations, personality characteristics, or academic aptitude. A preliminary multivariate analysis of variance of leavers and stayers was done with respect to academic aptitude, personality characteristics, prematriculation expectations of their academic programs and nonacademic lives, expected number of informal contacts with faculty, and the number of extracurricular activities in which the students would engage. The resulting F-ratio (.639, with $d.f. = 15/235$) was nonsignificant, indicating no differences between the groups with respect to these initial attributes. Nor did any univariate analyses of variance on these variables indicate significant differences.

It may be, particularly at larger institutions such as the one in this study, that if a student can find what Stern (1970) called an ecological niche, then the liklihood of that student's becoming integrated into institutional social and academic systems, and of remaining at the institution, may be substantially increased. If this is so, then initial student characteristics may be more important in the dynamics of attrition at smaller institutions, where the variety of niches from which a freshman may choose is more limited than it is at larger schools.

Tinto also theorized that social and academic integration are approximately equally important in students' attrition decisions, and Terenzini and Pascarella (1977) reported evidence supporting this conceptual equality. The results of the current study, however, indicate that academic dimensions may be more influential than social considerations in students' decisions to remain or withdraw voluntarily. Of the four primary discriminators in this study, the two most important ones (affective appeal and dullness/apathy of the academic program) related to academic matters; of the other two, one (sureness SU was the right choice) was an indicator of general integration, and the other (amount of informal contact with faculty) might be argued to influence both social and academic integration. Indeed, Tinto (p. 109) acknowledges such a dual role for student-faculty interaction, and our earlier study (1976) reported evidence supporting such a double influence by faculty interaction. Moreover, none of the four dimensions of students' perceptions of their nonacademic lives, nor the number of extracurricular activities in which they engaged, made a significant contribution to discrimination between the groups.

It is possible, of course, that the opportunities and mechanisms for facilitating the assimilation of freshmen into this institution's social system are quite adequate, yielding rewards sufficient to make social maladaptation an insignificant factor in freshman attrition at this university. Whether this is, in fact, the case—and whether the conceptual equality in importance of social and academic integration, as Tinto theorized, obtains at a cross-institutional level—can only be determined through additional research.

As previously noted, this study is limited by the fact that it was conducted on a single campus. The applicability of Tinto's theory for researching (and reducing) attrition on other campuses remains to be tested by subsequent studies in different settings, but the results of this study suggest the theory has merit.

References

Armor, D.J. Theta reliability and factor scaling. In H.L. Costner (Ed.), *Sociological methodology: 1973–74*. San Francisco: Jossey-Bass Inc., 1974, 17–50.

Cope, R.G., & Hannah, W. *Revolving college doors: The causes and consequences of dropping out, stopping out, and transferring*. New York: Wiley-Interscience, 1975.

Kaiser, H.F. Computer program for varimax rotation in factor analysis. *Educational and Psychological Measurement*, 1959, *19*, 413–420.

Kamens, D. The college charter and college size: Effects on occupational choice and college attrition. *Sociology of Education*, 1971, *44*, 270–296.

Kelly, E.F., Pascarella, E.T., Terenzini, P.T., & Chapman, D. *The development and use of Adjective Rating Scale: A measure of attitude toward courses and programs*. (Research Report No. 8). Syracuse: Center for Instructional Development, 1976.

Pascarella, E.T. & Terenzini, P.T. Informal interaction with faculty and freshman ratings of academic and nonacademic experience of college. *Journal of Educational Research*, 1976, *70*, 35–41.

Rootman, I. Voluntary withdrawl from a total adult socialization organization: A model. *Sociology of Education*, 1972, *45*, 258–270.

Spady, W.G. Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange*, 1970, *1*, 64–85.

Spady, W.G. Dropouts from higher education: Toward an empirical model. *Interchange*, 1971, *2*, 38–62.

Stern, G.G. *People in context: Measuring person-environment congruence in education and industry.* New York: Wiley, 1970.

Terenzini, P.T., & Pascarella, E.T. Voluntary freshman attrition and patterns of social and academic integration in a university: A test of a conceptual model. *Research in Higher Education,* 1977, *6,* 25–43.

Tinto, V. Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research,* 1975, *45,* 89–125.

THE USEFULNESS OF ADMINISTRATIVE PLANNING AND MANAGEMENT INFORMATION FOR PROSPECTIVE STUDENTS

Oscar T. Lenning
Edward M. Cooper
National Center for Higher Education Management Systems

Most postsecondary institutions have a large variety of what might be called administrative planning and management information in various offices across the campus (e.g., in the admissions, alumni, business, dean's, financial aids, institutional research, placement, registrar's and residence halls offices). The Better Information for Student Choice of College project of the National Center for Higher Education Management Systems (NCHEMS) was based on the premise that some of this information (which is typically used for purposes such as institutional and departmental planning, policy formulation, and decision making, and which has often not been considered for use by students in their decision making) could be useful to prospective students as they make their choices concerning what postsecondary institution to attend. Other premises of the project were that such information would need to be transferred into a different form in order to be really useful to students.

Project staff worked with various groups of people in different contexts to identify relevant information that could aid students in their choice of a postsecondary institution. Included were: admissions personnel, counselling center personnel, institutional research personnel, other administrators, faculty members, transfer students, graduate students, minority students of different kinds, older students, sophomore students who enrolled out of high school, and other student groups at a selected group of colleges representing different types of postsecondary institutions; high school seniors in the process of choosing a college; high school guidance counselors; and parents of high school students and college sophomores who entered out of college.

Personnel and students from 15 postsecondary institutions and over 150 high schools participated in one or more phases of the project. Five of the postsecondary institutions, each representing a type of college and being located in different parts of the country, participated in all phases of the project, from early planning to the end.[1] A total of 3,308 out of the 7,815 diverse people contacted (42%) responded to the formal needs assessment questionnaire (several hundred others having previously responded to early drafts of the questionnaires to try them out and suggest changes), and over 500 relevant people were formally interviewed during the project. In addition, 384 college freshmen at the five colleges participated in a preliminary survey which concerned the contribution of different presentation formats to understanding and the ease with which institutional comparisions can be made for particular types of information.

Developing and Administering the Needs Assessment Questionnaire

The initial weeks of the project involved loosely structured interviews conducted with students, counselors, and other personnel at four quite different high schools (one small rural, one suburban, one inner-city, and one Catholic urban) and three colleges (one public commuter university, one community college, and one Catholic liberal arts college) in the Denver area. The interviewees were asked what questions needed to be answered for a prospective college student to effectively choose an institution to attend, what specific items of information would help answer the various questions, what information was needed that postsecondary institutions were not providing, and what items of information were being provided but were inadequate in content and/or form. Based on these interviews, a review of the literature in the college choice area, a review of data-gathering questionnaires commonly utilized at colleges, and a review of lists of college data base items available at NCHEMS, the staff prepared, where possible need was indicated, a pool of rough-draft items in questionnaire format. Ideas meaningfully related to one another were included in the same printed item to show such a relationship. This bothered some psychometrically oriented NCHEMS staff people who reviewed them, since one principle of psychometrics is to have only one idea in a single item. However, it served well in this early stage for facilitating economy and transition in subsequent interviews.

Next, project campus coordinators for the five major participating colleges met over a period of two days with the project staff. The staff presented the preliminary work that had been done, and it was critiqued by the campus coordinators. Each institution agreed to choose fifty students at random for each of a number of special student groups to participate in the needs assessment survey. In addition, plans were made for further development of the needs assessment survey questionnaire, three- to five-day visits by an NCHEMS two-man team to each campus, and for administering the questionnaire. Every campus was to be provided with the requested numbers of each form of the questionnaire, and each campus was to administer the questionnaire at its own expense, using the methods best for it. (Administration guidelines to insure validity and reliability were outlined, however.) Each institution was to choose 20 diverse high schools that were its major feeders and write them to "pave the way." Then, NCHEMS would conduct the survey of high school counselors, students, and parents. Because of the Buckley Amendment, the colleges were to survey the parents for their sample of sophomore students.

At the meeting, the coordinators provided suggestions to assist development of a pilot test questionnaire for the project and agreed to get further input about items from their campuses. At the same time, the project staff tried out the rough-draft items on counselors and students at the Denver-area institutions referred to previously. In addition, later versions of the questionnaire were sent to some earlier interviewees who had expressed an interest in helping in this way, and they were then phoned for their reactions and suggestions regarding the items and format. The project staff also solicited suggestions from the entire NCHEMS staff (in addition to a small group that had been involved all along in a reactive and consultative role), from the fund members of the Fund for the Improvement of

Postsecondary Education (FIPSE) National Task Force on Better Information for Student Choice, and from a class of graduate students in measurement at the University of Colorado. Based on all of the preliminary input, and after going through seven separate drafts, a college-wide and an intended-major (intended program of study) form of a questionnaire for college undergraduates and high school students was developed for pilot test purposes. It was discovered that many of the items mentioned about institutions were also mentioned about curricular programs, and when asked about it, most people thought it would be useful to observe the relationship of the program to the "institution as a whole" on the same item (e.g., grading strictness) and compare this to the same relationship for another institution, using the same program there. The questionnaire item wording and structure were improved markedly to make the items more understandable and meaningful to both high school and college students (some compromises had to be made in order to have a form useful for both groups). The items that everyone agreed to be unimportant were eliminated, and the items of information that everyone agreed were being provided adequately by colleges were also deleted.

In early drafts, the staff had planned to ask two questions about each information item: (a) its importance for selecting a college and (b) whether or not colleges were currently supplying this information and if so, whether in an adequate manner. Preliminary tryout indicated that a two-column format (for two responses to each item) had the following problems: it was too complex for many students, numerous students tended to answer the same in both columns for the same item (which suggested a possible response set), and it made the time required to complete the questionnaire too lengthy. Therefore, since good interview evidence had been obtained from a variety of groups that the items remaining were inadequate in some respect for most colleges, the inquiry was limited to *importance to the college selection process.*

Next, the pilot test questionnaires were critiqued orally during extensive interviews conducted by the two project staff with personnel and students at the five participating colleges during three- to five-day visits to each campus. The number of people interviewed ranged from 25 at Seattle Pacific College to over 150 at Central State University. The interview sample had been determined by the project coordinator for each campus. At Drake and Central State, the staff also talked to counselors from feeder community colleges and high schools. Seattle Pacific had them interview a couple of youth pastors in a local church of their denomination. Valencia scheduled an interview with a liaison person who was interacting with area high schools on a full-time basis.

In addition to the campus interviews, each participating college ran a pilot test of the questionnaire with a diverse group of its students. Further modifications to the student questionnaires were made based on input from those administering the questionnaires, from analyzing questionnaire answers, and from an analysis of student reactions and suggestions written on the completed questionnaires.

Modifications were also made based on returns from a pilot test conducted by the project staff at ten diverse high schools throughout the state of Colorado. Arrangements were made by phone with the principal at each school for the school's counseling staff, as a group, to complete a pilot test high school counselor form of the questionnaire that had been constructed based on the interview inputs described previously. In addition, ten students, representative of the diversity of the students, were to complete the two student versions of the questionnaire (five students to take each questionnaire). In addition to identifying response data from completed questionnaires, follow-up phone calls were made to the schools to see if there had been any problems and to obtain suggestions for the high school part of the upcoming questionnaire survey. Since Educational Opportunity Program (EOP) counselors had reported that high school counselors generally pointed them toward white and high ability students, even when others were requested, several schools with high proportions of minorites were purposely chosen. The EOP contention was supported to some extent.

Based on the pilot test results and all of the interview data, eight different forms of a final survey questionnaire were developed: (a) a student questionnaire focusing on college-wide information needs, (b) a student questionnaire focusing on the needs for information about particular programs of study at the colleges being considered, (c) a high school counselor questionnaire focusing on the student needs for information perceived by counselors, (d) a graduate student form of the questionnaire focusing on the perceived needs for information in choosing a graduate school, (e) a transfer student form of the questionnaire focusing on the need for college-wide information in choosing a college to which to transfer, as compared to choosing an initial college, (f) a transfer student form of the questionnaire focusing on the need for program-of-study information in choosing a college to which to transfer, as compared to choosing an initial college, (g) a parent questionnaire focusing on college-wide information needs, and (h) a parent questionnaire focusing on program-of-study information needs. Each form of the questionnaire was printed on a different color of paper to faciliate administration and collection.

Institutions participating in the National Task Force on Better Information for Student Choice were invited to participate in the NCHEMS needs assessment survey, and three task force institutions took advantage of this offer. Macomb Community College counselors visited each of about two dozen area high schools and administered questionnaires to their counselors and groups of their students and parents. The University of California at Irvine administered the questionnaire to various groups of their students and to high school students, counselors, and parents. Portland State University administered the questionnaire to counselors throughout Oregon and Washington.

It had been hoped that one of the proprietary institutions on the task force would want to participate in the survey, but their energies were being taken up with their own local projects. Therefore, Armstrong Collge, a proprietary institution in Berkeley, California, whose dean had written asking for information about the project, was asked to participate. Armstrong College accepted and administered both the college-wide and college-program forms to 100 of its students.

The five other colleges each selected 20 of their feeder high schools for the survey, forwarded names and addresses of principals to NCHEMS, and wrote the principals informing them of the upcoming NCHEMS contact. (The participating task force colleges who desired to have surveys of high school samples were to conduct their own high school surveys.) The central project staff then sent to the 100 principals typed letters, one counselor form, and ten sets of student/parent forms. In each letter, the college that had recommended them as a high school "that would be willing to help out" was mentioned. Several schools in each group having many minority students were asked to include only minority students in the survey, based on the pilot test experience. Each of five of the student/parent sets included a college-wide information questionnaire for students, and one for parents, stapled to a cover sheet that had a short message for the student and a short message for the parents. Each of the other five student/parent sets included college-major questionnaires of both kinds stapled to another cover sheet.

The principals were requested to have their counselors complete the counselor form as a group. They were also asked to select ten senior students currently in the process of choosing a college and to give each of them a questionnaire set to take home—where they and their parents would independently complete their respective questionnaires (after which they could compare answers, if they desired). When the counselors' questionnaire and at least six of the student/parent sets were completed, the principal was to return them to NCHEMS in the preaddressed and stamped envelope. The letter also promised to provide the principals with results of the high school portion of the study after it was completed.

Since New England was not represented at all in any group of the project, and, considering the feeling of some that New England students might be unique, NCHEMS obtained names and addresses of five high school principals in Vermont who, it was thought, would be willing to cooperate with the project, and mailings were also made to them.

A serious problem occurred with high schools in metropolitan areas when the project staff started receiving letters from high schools saying that their districts would not allow them to participate in outside surveys that had not been approved by the district research office. The campus coordinators were asked to check with large school districts in their areas, and they found that the problem was quite extensive. In almost every case, the policies were recently enacted, which meant that the local colleges did not yet know about them. Furthermore, none of the schools had replied to the letters from the colleges to let them know about the problem, so both NCHEMS and the colleges had erroneously assumed that everything was satisfactory. With the help of the campus coordinators, the proper district forms were completed and submitted. Approval was obtained in almost every case (one refusal being an apparent political problem where they were afraid to even hint at extra work of any kind for school staffs).

Results of the Needs Assessment Survey

In addition to the overall analyses, separate analyses for each of the nine participating colleges were done as follows: (a) separately for each student subgroup on their campus that had at least 25 respondents, (b) for the parents of their sophomore group if there were at least 25 respondents, and (c) for the students and parents associated with their feeder high schools. Each participating school was provided by NCHEMS with the following: staff summaries of the total study results, computer printout for their groups of respondents, punch cards for all of their respondents, which they could use for additional analyses for their campus (background data collected on each student questionnaire making a number of different analyses feasible), and an NCHEMS-prepared summary report discussing the major findings for their local campus and how they compared to the results for all participating colleges for those groups.

In order to reduce costs and response bias, it was decided that, rather than distribute a large number of questionnaires to each survey sample, participating colleges would select only 50 students at random for each of their subgroups and continue following up until a 60 percent response rate was reached. This would result in 30 respondents for each group, which is the number needed for assurance that there will be stability for means, percentages, and simple statistical tests, assuming that the samples were carefully selected using random procedures. Except for several basic groups that almost everyone examined, the response rate goal was not reached, and most groups at each college had *n* counts that were too low to have their responses analyzed separately for that college. Interestingly, the response rates for the high school samples (54 percent average) tended to be much higher than the response rates for the college samples (35 percent average).

For all colleges combined, a total of 29 of the 64 college-wide items were rated very important by a majority of the respondents in two or more of the groups. An additional 17 of the items were rated important or higher by the majority of respondents in most of the groups. The responses to items on both the college-major and college-wide forms were quite similar, even though the forms asked about the need for information from the perspective of the (intended) college program in the first case and college-wide general information in the latter. Overall, items were rated slightly less important by those taking the college-major forms.[3]

The most important area of information was the section, Information about Instruction and Instructors. This included items on "the way classes are taught . . . , descriptions of the instructors . . . , class sizes," etc. The items of highest importance were the issues of transferability of courses to other institutions, the minimum number of courses in the college major required for graduation, the minimum number of courses outside of the college major required for graduation, and the time at which a student must declare a major field of study if he or she is to graduate on time. Other important clusters of items included college impact on last year's graduates, admissions information, financial aid information, and general information (availability, cost, and student ratings of different kinds of housing; the specific goals and objectives of the college or program; students' descriptions of the general atmosphere at the college; student input to college decision making; and evidence of financial soundness of the college or program). Items dealing with information about students (age, cultural background, etc.) were rated the poorest. The parents of high school students and parents of college students were consistent in their ratings of items, with no significant differences apparent in their responses to the 61 college-major items or the 64 college-wide items.

Concerning age differences, older students tended to see more of a need for program information, while younger students tended to see more of a need for college-wide information. Interestingly, of the older students, those 45 years and older tended to answer differently than those less than 45 years old: they seemed to need less specific information and were more conservative in their responses (sticking more to the middle of the scale).

Transfer students answered similarly to undergraduate sophomores concerning their initial choice of college but wanted more specific information concerning a college to which to transfer. Surprisingly, the graduate student responses concerning choice of a graduate school were similar to those of the undergraduate students concerning choice of an undergraduate school, except for expected differences such as housing.

The minority groups tended to rate all information as more important than did the overall sample. They also tended to be much more concerned than others (and this especially came out in the interviews) about student body characteristics. The interviews also indicated some very special concerns—such as racial/ethnic composition of the faculty, whether there were black (or Indian or Chicano) organizations on campus, and how active they were, whether there was a black studies program, etc. Although the Indian and Chicano samples were not large enough to draw valid conclusions, there were indications that the three racial groups were answering quite differently on some of the items. Also, a number of minority students, as well as Educational Opportunity Program (EOP) counselors, reported that characteristic and experience profiles of the total student body were not very helpful to them. They apparently need separate profiles by race of student characteristics, how students adjust and achieve, and their experiences on the campus.

After the study was completed, a special report of the needs assessment findings, that utilized a question-and-answer format, was sent to the 105 high schools to which NCHEMS had sent survey forms, along with the list of the 29 items that had been rated highest by most groups. That report has some additional findings that may be of interest to the reader. It is available at cost from NCHEMS.

The project staff also made follow-up phone calls to selected people (from various groups) who had provided phone numbers on their questionnaires and had indicated they would be interested in being contacted for clarification about why they had answered as they did and what their perceptions of need were. After about two dozen calls, no new information had been attained (comments just confirming what had been found in the interviews during the first few months of the project), so additional calls were not made.

Availability, Accuracy, and Willingness to Release Data

During the on-campus interviews, the project staff talked to institutional researchers and other relevant staff about the availability and accuracy of the information being suggested for prospective students as well as the feasibility of being able to collect it if it was not already available. Except for outcome information and student ratings of various kinds, most of the information was available at the five colleges. Additional concern was expressed at one of the institutions about some of the information being available but not in machine-readable form. In regard to accuracy, there was concern about the fact that often different definitions are used in different colleges for the same index. For example, some institutions include athletic scholarships in financial aid, while others do not.

The staff also talked to the presidents and other policy makers at the five colleges about their willingness to release such data to prospective students. In general, no one saw any problem with releasing information as long as proper precautions were taken to put it into context in order to keep it from being misleading. One exception was a president who said "information is power" and must be handled with great care. He said he could speak to this question only after he saw how the specific information was to be presented.

After the overall needs assessment analyses were completed, an availability-of-data survey questionnaire and a willingness-to-release-data survey questionnaire were developed, focusing separately on the 29 items rated especially important in the needs assessment survey. One copy of each questionnaire was sent to each of the five campus coordinators who were asked to have appropriate campus personnel answer them. They were to bring them along and discuss them at the final campus coordinators meeting with central project staff. Once again, the survey results confirmed the interview results: all five institutions had available the needed information, except for outcomes information and student ratings. All five campuses expressed a willingness to release the various items of information as long as care was taken in its presentation. Several campuses expressed concern, however, about releasing financial-aid-by-family-income data and instructor ratings. They thought such data could easily be misinterpreted by students.

It should be kept in mind that these were only five colleges, which were chosen because they have more planning and management information than the typical college, in addition to a special interest in better information. For example, at one of the other colleges visited initially, the institutional people seemed fearful of releasing much of the information to prospective students. Furthermore, they said that much of it [illegible] even available and could not be collected without [illegible] financial help. They did not have a director of insitutional research.

Conclusion

Only a small number of postsecondary institutions were involved in this study (nine in the survey and six others in the early interview phases), and the total samples at each college were selected to be diverse rather than representative of the student body at the college. Furthermore, the high schools, except for a few, were all feeder high schools to the participating colleges. Yet, several thousand diverse individuals responded, and the patterns seemed to make sense. In addition, the results were consistent, from college to college, with the expected differences (e.g., students considering the church-related college were more interested in information about religious activities on campus than were students considering the other colleges).

The results suggest very strongly that much administrative planning and management information is useful to prospective students in making a choice of college. All major groups used in the study, including counselors and parents, agreed that such information was needed and was often not provided, or provided inadequately, to prospective students. Furthermore, it seems clear that some of the major subgroups of students applying to campuses have special needs for information about the institutions and their programs. And, if one agrees with Clark, Gelatt, and Levine (1965) that "although the use of relevant information by no means guarantees the 'right' decision, 'good' decision making cannot occur without it" (p. 47), it might be expected that the effective communication of such information will also benefit colleges and universities. For example, happier and more satisfied students might be expected to lead to higher student body morale, lower attrition, and more positive reports to friends back in high school and to relatives, factors which should also affect recruitment.

Additional information about the items in the survey questionnaires for this study, and what they mean, is provided by Lenning and Cooper (in press). They also give procedures and suggestions for needs assessment studies in this area and discuss considerations and effective procedures for communicating information to prospective students.

Preliminary data presented from the later survey in the project indicate that tables of tabulations may be the most effective means of communicating much of this type of information. (See Lenning & Cooper.) In that survey, institutional data for 12 of the 29 most important items were presented separately for two fictitious colleges (College A and College B), using five different formats: (a) tables of tabulated statistics, (b) tabulation as in *l* with the addition of a relevant cartoon or caricature, (c) script paragraphs, (d) questions and answers and (e) charts and graphs. A total of 369 incoming freshmen at the five colleges responded to the alternative presentations for each item separately in terms of two criteria: "which way of presenting this type of information is most understandable and meaningful to you" and "in which way of presenting this type of information is it easier to compare College A and College B?" Tables of tabulations (Alternative No. 1) were chosen as being most meaningful for 9 of the 12 items and as most useful in making comparisons for 8 of the 12 items. (This finding might logically be expected not to apply if tabulations are over-used, although data in the survey do not pertain at all to this question.) Thus, the data may not have to be reformatted for use by students nearly as much as had been anticipated. Conversely, the same 369 diverse new freshmen at five quite different colleges consistently rated script paragraphs (the format of most college catalogs and other publications) as the least effective of the five presentation formats.

Footnotes

[1] These institutions were: Central State University in Oklahoma, Drake University, Seattle Pacific College, the University of Colorado at Boulder, and Valencia Community College in Florida.

[2] Coded mean-range profiles for the combined college undergraduate group and six other major groups of respondents are available from NCHEMS at cost for both the college-wide and college-major forms of the questionnaire. Item tabulations and rankings for selected groups are also available.

References

Arnstein, G. *Toward a federal strategy for protection of the consumer of education.* Washington, D.C.: Federal Interagency Committee on Education, 1975.

Bacon, K., Olson, L. and Bruner, S. *The options handbook: Summary and recommendations.* Washington, D.C.: National Student Education Fund, 1976.

Brogley, E.R. Counselor and student perceptions of educational information needs in the selection of specially-oriented schools. (Doctoral dissertation, University of Iowa, 1967). *Dissertation Abstracts*, 1968, *28*, 2978-A.

Clarke, R., Gelatt, H.B. and Levine, L. A decision-making paradigm for local guidance research. *Personnel and Guidance Journal* 1965, *44*, 40–51.

Conrady, J. *The marketing/advertising world shares insights on teen-age selection of colleges and universities.* A panel presentation at the Institute for Improving Communication of College and Program Information to High School Students, Central State University, Edmond, Oklahoma, July 1976.

Commission on Nontraditional Study. *Diversity by design.* San Francisco: Jossey-Bass, Publishers, 1973.

Cope, R.G., and Hannah, W. *Revolving college doors: The causes and consequences of dropping out, stopping out, and transferring.* New York: Wiley, 1975.

CSS Student Committee on Student Financial Aid Problems. *Unmet needs.* New York: College Scholarship Service, 1976.

Crowley, W.H. The American higher educational labyrinth. In *From high school to college: Readings for counselors.* New York: College Entrance Examination Board, 1965.

Gottschalk, K.P. Socio-economic survey of Mountain Empire Community College Service Area (Report from Mountain Empire Community College). Big Stone Gap, VA: Mountain Empire Community College, 1976.

Hails, R. Improvement of communications. Practicum paper for Dr. Hall Duncan, Central State University, March 1976.

Helliwell, C.B. and Jung, S.M. *Consumer protection strategies: A literature review and synthesis.* Palo Alto, Ca: American Institutes for Research, 1975.

Hoyt, K.B. SOS: A call to action. *American Vocational Journal* 1968, *43*, (5) 51–55.

Hoyt, K.B. *Consumer protection in postsecondary occupational education.* Paper presented at the Commission of the States Conference on Protection of the Consumer in Postsecondary Education, Denver, 1974.

Kerr, W.D. High school counselors and college information. *Journal of College Student Personnel* 1963, *15*, 45–49.

Kinnick, M.K., and Lenning, O.T. *The information needs of prospective students: The kinds of information postsecondary education should provide, and other issues.* A resource paper prepared for the National Task Force on Better Information for Student Choice, Boulder, Co., 1976.

Lenning, O.T. *An exploratory study of factors differentiating freshman educational growth.* A paper presented at the annual meeting of the American College Personnel Association, St. Louis, March 1970.

Lenning, O.T. *Student factors related to educational growth at a church-related liberal arts college.* A paper presented at the annual meeting of the American Educational Research Association, Minneapolis, March 1970.

Lenning, O.T. *Does form of institutional communication to prospective students make a difference in better information?* A resource paper prepared for the National Task Force on Better Information for Student Choice, Boulder, Co., 1976.

Lenning, O.T. and Cooper, E.M. *Guidebook for colleges and universities: On presenting information to prospective students.* Boulder, Co.: National Center for Higher Education Management Systems, in press.

Siddoway, W.R. Information needs of students during the high school senior to college freshman transition. *College and University* 1967, *42*, 356–364.

Abstracts of Additional Papers

ASSESSING DIMENSIONS OF QUALITY IN DOCTORAL EDUCATION: A REPORT ON RECENT RESEARCH

Mary Jo Clark
Educational Testing Service

This research surveyed advanced graduate students, faculty members who teach graduate students, and recent alumni from doctoral programs in chemistry, history, and psychology at 25 representative American universities to measure program performance in a variety of quality-related areas. The resulting indices were evaluated in relation to one another and to factual information about the resources and structure of the programs. Differences in program purpose (to train researchers, college teachers, or other kinds of professional practitioners) were explored in addition to differences and similarities in discipline, size, and setting. A profile of departmental scores on selected indices illustrates a program's performance in relation to other programs with similar purposes in the same discipline. Possible uses and users of the information are explored, and methods to improve the assessment of graduate programs are recommended.

ANTICIPATORY SOCIALIZATION OF GRADUATE STUDENTS

James L. Bess
Teachers College, Columbia University

The majority of college and university faculty have narrow and traditional views of the objectives of education and of the modes by which they can be achieved. In part, these attitudes can be traced to the nature of the occupational image attached to the academic profession and to the kinds of persons who are attracted to it. An equally important influence on faculty orientations toward their roles, however, is the socialization process which takes place in graduate school. Typically, the processes of professional molding engender a relatively conservative uniformity of attitudes among students. Moreover, any proclivities toward change and innovation which students bring with them at the start of graduate school tend to be dampened or eliminated.

The research findings reported in this paper compare new graduate students prior to initial arrival at a campus with faculty members already employed there. The data indicate that beginning graduate students anticipate that, as faculty members, they will prefer to teach more, try out new teaching techniques, subject themselves to collegial and peer evaluation, work with students who have special learning difficulties, and interact with students informally to contribute to their growth and development. Further, new graduate students express stronger preferences for administrative and community service. Findings also reveal differences in personality by field and the relationship of both to preferred activities.

FACULTY VIEWS OF EDUCATIONAL PURPOSE AND PROCESS: AN INTERINSTITUTIONAL STUDY OF LIBERAL ARTS FACULTY

Joan S. Stark
Syracuse University
Barry R. Morstain
University of Delaware

Since faculty play a pivotal role in developing academic programs and policies, their views toward education may have a major influence on the adaptability or responsiveness of an institution to evolving educational needs and priorities. Faculty views have seldom been systematically explored.

Faculty at six private liberal arts colleges were asked to complete the Faculty Orientations Survey (FOS), a recently developed research inventory. The instrument consists of 56 Likert-type items tapping faculty opinion on the nature and purpose of a college education, preferred teaching-learning arrangements, and student involvement in educational decision making. Of 396 faculty at the six colleges, 287 completed the FOS for a response rate of 72%.

A principal components factor analysis performed on the data led to identification of faculty attitude dimensions. Items from the inventory were aggregated to form factor scales; estimates of scale reliability (coefficient alpha) were substantial. Analyses of variance using the factor scale score data indicated that there are more commonalities than differences in faculty educational orientations across diverse liberal arts colleges. However, examination of attitudes expressed by faculty grouped by curriculum area, academic rank, time devoted to research/scholarship, years of teaching experience, etc. suggest that faculty do differ substantively in their educational views and orientation.

COMMUNITY SURVEY: DISCOVERING THE IDENTIFIED COMMUNITY NEEDS FOR ADMINISTRATIVE PLANNING AND DECISION MAKING

Roger Andersen
Dale R. Reed
Allegany Community College, Maryland

The main purpose of the research was to determine and assess community feedback concerning the Allegany Community College in order to determine the awareness, the perceptions, and the needs of this population in regard to the college. A four percent random sample of the county's residential telephone population was utilized as the study's sample with a telephone survey technique employed. Students served as callers for the study and were trained in two evening sessions that included a special manual prepared for this survey along with simulation exercises. All 20 items of the survey were subjected to sex and location breakdowns. Results showed respondents feel that the college is doing a very good job in serving the community and that the two major reasons that participants would continue their education at the college were its location and low cost. However, a majority of the respondents overestimated the semester tuition, the student body enrollment, and the age of the student body. This indicated a large degree of community misconception and a lack of awareness regarding the college. Other results indicate the types of media that the community utilizes and to what degree, opinions concerning program expansion and the possibility of establishing credit extension centers, and reasons for not enrolling in courses of the college.

NONINTELLECTIVE PREDICTORS OF STUDENT PERSISTENCE/ATTRITION AND PERFORMANCE

William F. Brazziel
University of Connecticut

This paper reports design, methodology, and findings of three studies representative of types of data institutional researchers might generate for college and university management information systems where predictors of student attrition and performance have value.

Nearly half of all American college students leave college before graduation and 85% do so for nonintellective reasons. Attrition increases program costs and decreases faculty productivity. Efforts to increase degreed stocks of women and minorities entail considerable investment in support and support services. Addressing the nonintellective factors impacting on students assumes a high priority in both of these instances. Administrators of expensive, high-investment programs are also concerned that their graduates perform well on the labor market.

Traditional predictor variables of SAT scores and high school grades seldom account for more than 25% of the variance in student performance in college, and they account for even less in decisions of students to leave school. The studies in this paper added nonintellective variables to this combination and increased the amount of variance accounted for significantly.

The studies involved prediction of academic performance, persistence/attrition, and job performance of students in a health careers program, prediction of college enrollment and performance of students in a high school enrichment program for needy students (many of whom were members of minority groups), and prediction of status as a college administrator for women college students. Birth order, interests, socioeconomic status and early adolescent school experiences were identified as useful predictors in all or some of the studies. Step-wise regression analysis, analysis of variance, and multiple analysis of variance constituted the main statistical applications.

AN EXPLORATION OF GRADE INFLATION AND SOME RELATED FACTORS IN HIGHER EDUCATION

Paul B. Carney
Richard L. Isakson
Randy Ellsworth
Wichita State University

This research documented grade inflation at Wichita State University between 1965 and 1975. The development of a more restrictive definition of grade inflation at the university level involving student aptitude as well as student grades strengthened the discovery of this phenomenon at Wichita State University. The present study also documented grade inflation within the university's College of Education between 1968 and 1976. Further study of this phenomenon within the College of Education uncovered differing patterns of inflation in graduate and undergraduate grades. This study's attempt to identify factors related to grade inflation was perhaps its most important contribution. Three factors possibly related to grade inflation were identified: the increased use of criterion-referenced grading by university faculty; the use of student evaluation in faculty salary, tenure, and promotion decisions; and an expansion of experience-oriented courses. One other factor investigated, the increased use of incompletes and withdrawals by students to protect their grade point averages, was found to be unrelated to grade inflation. In connection with this research, a questionnaire was developed to assess the attitudes of the current faculty within the College of Education toward grading and grade inflation. The questionnaire provided further information concerning the major criteria used in grading and the major factors contributing to grade inflation as seen by responding members of the faculty.

FACULTY ACCEPTANCE OF WORK-LOAD SURVEYS

John W. Creswell
William J. Davis
Oklahoma State University
Gerald H. Kramer
Pittsburg State University, Kansas

Reports issued from the Faculty Activity Analysis (FAA) project sponsored by the National Center For Higher Education Management Systems (NCHEMS) have recently summarized the issues that face those who design faculty activity analysis surveys. These work-load surveys have assessed faculty effort in activities such as teaching, research and professional service. In some instances, they have contributed to multidimensional controversies among faculty, administrators, and external control groups over the appropriate "professional life" of the academic. Interestingly enough, research studies have failed to examine faculty reactions to the collection of the activity data, although NCHEMS has raised several hypotheses about factors that are related to faculty acceptance.

This research study empirically tested three NCHEMS hypotheses at one large midwestern university. Faculty at the university completed a questionnaire that assessed their attitude toward the work-load survey administered at the institution and independent variables suggested by NCHEMS: (a) the degree to which faculty felt they were a strong governing force in the institution, (b) the degree to which faculty felt that survey data could help promote their departments, and (c) the number of years that the faculty had completed the survey. A sociopsychological perspective of acceptance based on the academic as a professional, as suggested by Etzioni and Parsons, and the academic as a worker, advanced by Arygris, was used as an explanatory framework for the research hypotheses. The findings showed that faculty tend to accept a work-load survey if it has relevance for them in the department, but acceptance appeared to have little relationship to faculty autonomy and years of completing the instrument. Implications for administrative planners are to involve departmental faculty in the design of work-load surveys and to carefully assess how the department uses survey data.

UNDERSTANDING COSTING METHODOLOGIES

William C. Crothers
University of Wisconsin-Stout
Thomas M. Freeman
Michigan State University

The costing methodology employed is an important component to understand as we work with the cost data in policy formation and financial analysis. Far too often it is the cost that is the focal point rather than how it was derived, what it means, and how it can be utilized in decision making.

There are three basic options for allocating costs to courses. These may be categorized as managed costs, manipulated proxy costs, and actual costs. Managed costs are built from an assignment base. They approach true or actual cost to the degree that the departmental chairperson knows the faculty member's work load in detail and is able to report his assignment to various functions accordingly. This varies greatly with the size of the department, the complexity of the faculty functions, the complexity of the instructional model, the relationship between the chairperson and the faculty member, and the administrative demands on the chairperson's time.

The manipulated costs use proxies for allocating costs to courses in an attempt to approach the reality of actual faculty work-load distribution. A study comparing the results using three proxies is reported in this paper.

The actual cost of instruction is related to the salary paid the professor and how he allocates his time to various functions including instruction. One of the most efficient methods for determining how the faculty allocates time to instruction is a Faculty Activity Analysis (FAA). This paper includes a report on a study conducted at Michigan State University comparing different costing methodologies.

WHEN THE SUM OF THE PARTS DOESN'T EQUAL THE WHOLE: A BUDGET PLANNING SYSTEM FOR MISAGGREGATED DATA

Juan G. Garcia
University of Massachusetts
Robert T. Lewis
Georgia Institute of Technology

In spite of the development of new budget planning methodologies in recent years, many institutions of higher education continue to restrict the time span encompassed in their fiscal plans to a period ranging from the recent past to perhaps one or two years into the future. One problem to consider in shifting the planning horizon from short-range to medium- and long-range planning is the level at which data is entered into the planning information system. Some organizational units or programmatic areas of an institution generate fiscal plans in great detail, while others plan in aggregate at higher levels. However, most information systems require that all data be entered at one specific level which is determined beforehand. The relationship between data entry level and planning horizon varies sharply in the region from one to five years on the planning horizon. As the planning horizon range is shortened, there is a corresponding decrease in the data entry range. Conversely, as the planning horizon range is lengthened, the data entry range increases. An information system designer can capitalize on this characteristic by developing a system which permits the data entry level to vary with the planning horizon and organizational level or programmatic area. The lower data entry levels will more likely occur in the near future and the higher data entry levels in the distant future. Such a system allows flexibility in the entry of future fiscal plans at dissimilar levels; it permits the planner to select that level which is most appropriate to the task and data at hand.

DATA SYSTEMS DESIGN—A MODEL FOR DECISION MAKING

Barry Greenberg
Nancy L. Goodwin
Florida International University

In this presentation, a data systems approach to the decision-making process is presented as a means of increasing its effectiveness and efficiency.

Institutional research offices are accustomed to receiving requests for accurate data and data analyses which must be handled within a narrow range of time. There are several problems which need to be overcome in order for IR offices to fulfill this function. These center around the fact that most operating data systems within a university are not designed to supply data for decision making within a short period of time.

The location of a demand terminal within an office of institutional research makes it possible to overcome these difficulties. Such a configuration at Florida International University has led to significant increases in the ability of the office to handle present requests and, most importantly, in the ability of the office to do the developmental work necessary for improving all data systems.

In the presentation, examples of the types of data systems and data reports which have been generated in support of the [illegible]ion-making process are highlighted. Specific issues in [illegible] and long-range planning and in budgetary analyses are [illegible] and an explanation of how data was derived to consider [illegible] issues is discussed.

[illegible] theme of the presentation is that systems, such as the on[illegible] imperative if institutional research is ever to develop some independence from the operational systems which impact the daily operation of the university.

APPROACHES TO CROSS-UNIT COMPARISONS IN MEASURING THE EFFECTIVENESS OF ACADEMIC SUPPORT PROGRAMS

Harvey K. Jacobson
The University of Michigan

The past decade has seen an upsurge of interest in social measurement. Social accounting has emerged as a critical part of planning in higher education because of public disenchantment with higher education, troublesome economic stringencies, and wide diffusion of cost-analytic techniques. Top-level management increasingly seeks measurement, information, and reporting systems for planning, implementation, and evaluation. As budget pressures increase, the evaluation process shifts its focus from academic programs to support systems such as libraries and public relations and development units.

It becomes more and more important to interpret in rather precise terms the level of performance of support systems and to make comparisons between systems. The concept of effectiveness needs greater clarification in terms of scientific, technical, social, political, and economic definition. A review of conceptualization and measurement for support systems indicates that progress has been achieved with minimal cross-system interest. This paper examines approaches that hold promise for cross-unit assimilation and application and advances a conceptual context for assessment based on viewing the university as an information-processing organization.

APPLYING FORMATIVE AND SUMMATIVE EVALUATION STRATEGIES FOR MANAGING INTENDED OUTCOMES OF INSTITUTIONAL RESEARCH AND PLANNING

Elaine S. Jeffers
University of Maryland-Eastern Shore

Institutional research and planning must have an organizational framework for ongoing assessment of its outcomes. This paper illustrates selected alternative formative and summative evaluation techniques which can be used to accomplish this purpose. Evaluation procedures demonstrated for improving institutional management and ongoing assessment of outcomes consist of utilizing: (1) the CIPP (Context, Input, Process, Product) Model and the Fortune-Hutchinson Model (University of Massachusetts) as techniques for accomplishing formative and summative evaluation of the data-base management process, (2) a systems model for organizing a structure for accomplishing formative and summative evaluation of institutional outcomes, and (3) mini systems models for organizing a structure for accomplishing formative evaluation of planning done by special programs and administrative units. Results of illustrating the above techniques indicate the following conclusions: (1) the formative evaluation strategies upgrade institutional research and planning operations by offering alternative structures for periodically assessing the quality and progress of implemented efforts, (2) that summative evaluation strategies upgrade institutional research and planning operations by offering possible solutions for judging the completeness and sufficiency of implemented efforts.

A FRAMEWORK FOR ANALYSIS OF JOINT PRODUCTION COSTS IN THE MEDICAL EDUCATION PROCESS

H. P. Jolly, Jr.
Association of American Medical Colleges
K. L. Kutina
Case Western Reserve University

As in some industrial processes, many activities in higher education lead simultaneously to the production of multiple outputs. This phenomenon is prevalent in medical education because much of the instruction is necessarily carried on in the course of delivery of medical care. This joint production of outputs from a single indivisible activity also occurs with university-based research programs which incorporate graduate students. Such activities contribute to the production of both new knowledge and graduate education.

Although one can often determine the total cost of an activity from which multiple outputs are produced, determination of a unique cost ascribable to each product is, in principle, impossible. However, it is extremely important for analysts of higher education to work toward developing rational approaches to analyzing the costs of programmatic outputs from joint activities. Such activities can comprise significant portions of a university faculty's activities. In the School of Medicine at Case Western Reserve University (CWRU), studies have indicated that about 45 percent of the faculty's activities yield joint outputs, representing over $8,000,000 of expense.

The authors present an analytical framework for determining a limited range of values over which costs of a joint activity are ascribable to given outputs. Guidelines for choosing specific values within the ranges are also proposed. The methodology is illustrated using actual data from studies at the CWRU School of Medicine.

A MODEL FOR DETERMINING INEQUALITY OF OPPORTUNITY IN PUBLIC INSTITUTIONS OF HIGHER EDUCATION

Richard C. Leventhal
University of Denver

American higher education today is faced with the problem of providing for greater access by a larger number of persons to institutions of higher education. The Carnegie Commission has used such terms as *equality of opportunity, access,* and *choice* in describing the task of providing increasing numbers of individuals the opportunity for higher education.

Choice may be said to be affected by three sets of factors: (1) the aspirations of the individual student, (2) personal factors, and (3) institutional and state policies.

In studying these three factors, we may observe that if a student decides to attend a public college or university and applies for admission to such an institution (this may be viewed as the aspirations of the student), then the personal as well as the institutional and state policies may actually become barriers to entrance. Thus, whether an individual's choice of a particular institution becomes a reality will be affected by the personal factors of the student's ability and financial resources and the institutional and state policies on budgeting, allocation, and method for admitting students as well as on awarding financial aid and size of award.

A major assumption of this study is that if it is socially desirable to maximize choice of the individual student, then the state should attempt to remove whatever barriers exist. This study focuses on the barriers to choice which are dependent upon state policies; it is significant not only to identify these potential barriers but also the policies which influence these barriers, with the hope that policies can be changed to reduce or eliminate them.

OLDER STUDENTS—HOW DIFFERENT ARE THEY?

John A. Muffo
University of Illinois at Urbana-Champaign

The study investigated the ways in which older students differ from younger ones with regard to their achievements, aspirations, and satisfactions. Achievement variables included academic performance and mode of admission, while aspirations were measured by academic majors and degree and career plans. Satisfaction variables focused on various academic and nonacademic aspects of the college. The study was limited in scope to a random sample of new students enrolled at Metropolitan State College, Denver, Colorado during the fall quarter of 1974.

The results of the study show that older and younger students, as well as men and women, do differ somewhat concerning achievements, aspirations, and satisfactions, but they do not differ to the extent implied by much of the current literature. Academic achievements vary according to age and sex, but the variance is due primarily to differences of sex and mode of admission, not to age alone. Major choice as a measure of aspirations differed initially, yet after one year, older and younger students had selected similar majors; their academic and career aspirations were likewise similar. The two groups showed no significant difference of opinion as to level of satisfaction with the institution.

In general, the study found that, among the type of students studied, significant differences do sometimes exist between older and younger students, but these differences are attributable to age only to the extent that age interacts with other variables to yield these results.

A SYSTEM FOR DEPARTMENTAL EVALUATION FOR PROMOTION, TENURE AND ASSIGNMENTS

Gilles G. Nadeau
Université de Moncton

The purpose of the paper is to present and describe a model for the evaluation of faculty in colleges and universities for purposes of promotion, tenure, and assignments. Following a recent study of evaluation practices in several institutions in Canada, the United States, Europe, and Australia, the author has developed a systematic model following sound evaluation principles which reflects actual practices. The paper outlines in some detail the ten components of the model.

A THIRD-GENERATION STUDENT INSTRUCTIONAL RATING SYSTEM

LeRoy A. Olson
Michigan State University

The academic governance structure of Michigan State University (MSU) has adopted a three-level Student Instructional Rating System (SIRS) which recognizes three functions of student ratings: feedback to instructors for purposes of improving instruction, information for administrators to aid in making decisions regarding faculty, and information to help students select courses and instructors.

SIRS Level 1 was designed to reflect the points in the MSU Code of Teaching Responsibility, a document reflecting minimum expectations for faculty members. Activities covered in the code include statement of course objectives, meeting class, holding office hours, and so on. Responses to the level-1 form are used, at the university level, in making administrative decisions concerning promotion, retention, and so on. Responses to items on clarity of objectives and convenience of office hours, for example, provide faculty members with feedback useful for the improvement of instruction.

SIRS Level 2 is directly oriented toward feedback to instructors for the improvement of instruction. Each teaching unit is responsible for the development of its own level-2 form. Many teaching units have developed forms whose items reflect the particular objectives of that unit. For example, the Department of American Thought and Language form includes items on reading and writing, areas of specific concern to that department. Level-2 forms adopted by teaching units probably contain rather general items in order to gain the consensus of unit faculty and will be necessarily followed up by more specific questions. Level-2 responses are also used in making administrative decisions at the teaching-unit level.

SIRS Level 3 is designed to provide students with information on other students' reactions to help them select instructors and courses. The form is developed by a committee composed of student members of the Academic Council and approved by a majority of the student members of the council. Administration of level-3 forms is voluntary at the discretion of the instructor, since the results are published.

The three-level SIRS has several major advantages. First, it allows students to respond to forms in terms of the use of the results. Second, the new SIRS authorizes and encourages the development of forms to meet the specific needs of each teaching department. Third, the university-wide form is based on a specific reference—in this case, the Code of Teaching Responsibility.

AN INVESTIGATION INTO THE SOCIAL STRUCTURE ASPECT OF BALDRIDGE'S POLITICAL MODEL AT A SMALL LIBERAL ARTS COLLEGE

Douglas R. Power
LeMoyne College

Responses to the Institutional Goals Inventory were elicited from random samples of a total of 837 students, alumni, parents, administrators, faculty, and trustees at a private, liberal arts college to gather perceptions of and preferences for institutional goals in an attempt to verify empirically the social structure aspect of a political model of governance.

The following null hypotheses were posed which were designed to test for significant differences in the way respondents perceive goals and the goals they would prefer:

H_1: There will be no significant differences in perceptions of current institutional goals between the internal constituent group and the external constituent group.

H_2: There will be no significant differences in preferences for institutional goals between the internal constituent group and the external constituent group.

H_3: There will be no significant differences in perceptions of current institutional goals for each possible pairwise comparison of constituent groups.

H_4: There will be no significant differences in preferences for institutional goals for each possible pairwise comparison of constituent groups.

Three-hundred ninety-two responses were returned and analyzed using multiple group discriminant function analysis to test for the significance of the differences among the various constituent groups related to perceptions of, and preferences for, institutional goals and to select those goals which discriminated between the various groups.

Based on the data collected and analyzed, each of the null hypotheses was rejected indicating that there were significant differences relating to perceptions of and preferences for institutional goals among the various constituent groups.

REVIEWING FACULTY SALARIES FOR CONSISTENCY

Gerald W. McLaughlin
John C. Smart
W. Kevin Hunt
J. R. Montgomery
Virginia Polytechnic Institute and State University

A major activity in academic and institutional administration is planning for and allocating dollars to faculty salaries. As with any organization, institutions need to insure that their salaries are consistent both internally and with comparable institutions. This resolves to a basic question of, What factors explain faculty salaries? Once this basic question is determined, administrators can more easily evaluate the faculty salary structure at their institutions for both internal and external consistency and plan for needed changes. This research develops a model for determining the direct and indirect effect of institutional and faculty characteristics on salaries of full-time teaching faculty. The analysis is done using path coefficients and a six-stage model.

The variables in each stage are measured as follows:

Stage 1. Institutional characteristics: Carnegie type, region, predominate race/sex, public or private control, and community size

Stage 2. Personal characteristics: Age, sex, race, highest degree, curriculum, years experience

Stage 3. Personal productivity: Days for professional activities, articles published, books, manuals or monographs written, publications in last two years, research funds

Stage 4. Institutional recognition: Tenure, rank, years since promotion

Stage 5. Duties: Hours administration, hours teaching, hours advising, hours research, number of classes

Stage 6. Salary: Current institutional salary.

The use of path coefficients provides measures of the relative influence of the direct and indirect effect of the independent measures on salary.

AN ANALYTICAL MODEL AND APPROACH FOR DESCRIBING AND IMPROVING AN INSTITUTION'S MANAGEMENT PROCESS: THROUGH A DECISION IMPLEMENTATION SYSTEM STRUCTURE ANALYSIS (DISSA) PROFILE

David S. Spence
United Board for College Development
Danny A. Joslyn
Interdenominational Theological Center

The purpose of management in a college is to ensure that important outcomes are attained—outcomes that fulfill the mission of the institution. While the purpose of management is to ensure that certain goal outcomes are met, the heart of management lies in making many kinds of choices about alternative activities on a daily basis. Therefore, the first step in improving management involves identifying those decision-making and implementation activities that take place. To facilitate this aspect of improvement, three dimensions are explored: (1) participation—who and in what manner, (2) information used in various steps of decision making and implementation, and (3) selection criteria—factors used to assess alternative actions.

These dimensions are analyzed in terms of twenty outcome areas as they relate to evaluation (past performance), budgeting (current to one-year activities), and planning (activities 2–5 years hence).

Profile I—Participation. This profile identifies persons who participate in (a) the definition of the problem faced, (b) the suggestions of alternative ways to solve the problem, (c) the choice of what criteria will be used in choosing an alternative, and (d) final selection of a single alternative.

Profile II—Information used. Information is needed for each decision to define the problem in terms of (a) the objectives to be reached and the current progress toward these objectives and (b) and assessment of the effects (outcomes) of the suggested alternatives.

Profile III—Selection criteria. While each alternative will supposedly solve the problem by closing the gap between the real and ideal objective outcomes, a decision must be made to determine which alternatives will be given priority. The factors used are other outcomes that might be generated through implementation of an alternative. This profile documents alternative choices by additional outcomes that may be generated.

THE DECISION-MAKING PROCESS OF COMMUNITY COLLEGE TRUSTEES

Eugene J. Sullivan
American Council on Education
Frank B. Pesci
Loyola College

The main purpose of this study was to obtain an understanding of the decision-making process of community college boards of trustees.

Empirical data were collected and analyzed concerning the interactional, decision-making behaviors of three boards of trustees from three different geographical settings—urban, suburban, and rural, in one state. The data were collected by means of (a) an observational method devised by Bales to study small-group behavior and (b) a questionnaire which was based on the twelve observational categories used in the Bales method.

The analysis of the data produced the following findings: (1) community college boards have different proportions of task-oriented and social-emotional acts for routine, or programmed, decisions than for creative, or nonprogrammed, decisions, (2) more programmed decisions are made than nonprogrammed ones, (3) community college presidents and trustees have different roles in the decision-making process, (4) the most influential persons in the decision making are the board chairperson, the vice-chairperson, and the president, the president being the most dominant, particularly in regard to control of information, (5) there are no differences in the decision-making processes of community college boards of trustees in urban, suburban, and rural settings, (6) trustees are not satisfied with their role of supporting proposals made by the president and would like to assume a more active and questioning role.

Among the recommendations made as a result of this study are the following: (1) revision of current board practices to allow for more meaningful trustee participation in decision making and (2) replication of this study for four-year college and university boards of trustees.

DO THEY GO WHERE THEY CAME FROM—A STUDY OF THE GRADUATES OF A COLLEGE OF MEDICINE

John C. Wolff, Jr.
University of Kentucky

The present study, in part a replication of 1970 findings, confirmed that graduates of the University of Kentucky College of Medicine (UKMC) who were originally from Appalachian Kentucky were more likely to practice in that medically underserved area than were graduates who entered the UKMC from anywhere else.

Study findings also included evidence that graduates from rural counties in Kentucky were more likely to practice in Kentucky than were graduates from urban counties. Graduates who chose family/general practice chose Kentucky practice more frequently than graduates in other medical specialties.

No major differences were found between urban and rural graduates in their choice of returning to the same county or Area Development District from which they entered. No differences were found in these same choices among graduates who chose selected medical specialties.

Admitting Appalachian students to meet the medical manpower needs of Appalachian Kentucky was recommended. Also recommended were admitting rural students and encouraging more students to select family practice as methods of meeting the medical manpower needs of the Commonwealth of Kentucky.

PECKING ORDERS: USES AND LIMITATIONS

S. Godwin Wong
University of California, San Francisco

In an effort to rank and rate programs and institutions in some pecking order, studies of various kinds have been conducted. Results of such comparative studies have often been quoted, misquoted, used, and misused in a variety of settings and for different purposes.

Most of the rankings claim to reflect an evaluation of the quality, reputation, and prestige of the programs. The myth of the elitist concept is intriguing. While ranking of any sort is inexact, many of the studies were rigorous research projects of interest to institutional planners and researchers.

However, many of the pecking orders do not represent an assessment of quality. The relative standing of an institution or program depends upon many factors—the qualifications and commitment of the faculty, size of the library collection, financial resources, ability of the students it attracts, the academic and physical environment of the institution, its organizational structure, performance of its graduates, and so on. A closer look at the studies is useful.

This paper examines, classifies, and categorizes the ranking and rating studies by field, type, scope and methodology. Such classification is important in understanding the validity and possible usage of the results. The potential uses and the advantages of using the results from such studies are discussed, while the limitations and pitfalls of these pecking orders are also addressed. Possible future directions in research in this area are explored.

A PLANNING SYSTEMS MODEL OF COST ANALYSIS

David J. Zaumeyer
Richard T. Wines
St. John's University

The research reported in this paper deals with the development of a conceptual framework intended to provide an understanding of the use of cost models in decision-making processes in education. A planning systems model is offered describing relationships between decision makers who require information and analysts who supply information based on perceived needs. It is a way of viewing the development of decision-making information which suggests not only what data might be sought but also on what criteria these data might be considered useful for planning and budgeting purposes.

The model itself is composed of three interrelated systems: a decision-making system, a model-building system, and a model system. Each component is described, and interrelationships among the components are detailed. The result is a totally integrated model which places the search for factual information in perspective with the organizational, environmental, and public-policy dimensions of the use of cost models in decision making.

The model described draws on systems theory, organization theory, and economics and attempts to provide a comprehensive perspective of decision-making and related information needs. Because of the authors' heavy involvement in the design of cost models in medical education, the model is illustrated using health professionals education as the referent system. However, the framework is perceived applicable to other program structures in higher education.

INSTRUCTIONAL MARKETING

DeForest L. (Woody) Trautman
John J. Fornof
Patsy F. Scott
The University of Toledo

On campuses today the officer of institutional research, academic studies or management information plays several roles: projector of enrollments, follow-up counter of student work load, warner of the implications of potential enrollment shifts, and sometimes as instigator of new program initiatives. To aid the fulfillment of prophecy, this officer may also informally address the issues and actions of what may be descriptively termed "instructional marketing."

Continuing full-time student enrollments fluctuate widely, and large swings in the now prominent part-time enrollment occur for unforeseen scheduling or program reasons. The profound changes in both clients and programs of the instructional marketplace suggest refocusing of data collection and its presentation to provide adequate understanding of problems and to stimulate appropriate combined administrative and academic decisions. Profile data, for example, might include a basic cross-tabulation unit of sex/age/ethnicity/major/full-part/undergrad-grad/suburban/non-local, and of morning/afternoon/evening/weekend scheduling preference. A program "broker" would help each academic unit translate the findings of instructional marketing into its own new offerings.

This paper discusses the applications at the University of Toledo, indicates the new data, the decision and brokerage functions which have emerged, and presents a preliminary appraisal of results.

THE USES OF SURVEYS OF GRADUATES (OUTCOME STUDIES) FOR ACCOUNTABILITY AND ACADEMIC PLANNING

Ralph E. Henard
University of Colorado-Denver

Surveys of graduates provided information about each offered degree program that was used for reports to state committees, other governmental agencies, and accrediting associations. Management information for academic planning, accountability, and resource allocations was obtained from the data. Examples of information resulting from surveys of graduates at a large multi-campus university and a medium-sized urban campus are as follows:

1. Most frequently mentioned purposes for obtaining degrees were the following: (a) occupational preparation and advancement (baccalaureates—61 percent, advanced degree recipients—76 percent), and (b), general education (baccalaureates—20 percent, advanced degree recipients—19 percent).
2. The first employment after receiving the degree was directly or indirectly related to the academic field of study (baccalaureates—70 percent, advanced degree recipients—91 percent).
3. Only 3.7 percent of the 1970–75 graduates are unemployed.
4. The degree was helpful (a) in obtaining employment (80 percent), (b) in providing occupational knowledge (89 percent), and (c) for intellectual-personal development (91 percent).
5. The median annual income for baccalaureates increased 60 percent in five years or less after receiving their degrees.
6. Intergenerational mobility was evident for 67 percent.
7. Major areas of degrees were (a) arts/sciences disciplines (54 percent), (b) professional schools (46 percent).

Information from the surveys has been used to supply outcomes information to the State Planning and Budgeting Office, to a national accreditation association, and to the Commission on Higher Education for degree proposals.

Management information related to accountability and academic planning has resulted from data about graduates' degree-related employment, income, evaluations of instruction and student services, and from evidenced socioeconomic mobility. However, accountability and academic planning must consider the graduates' purposes in obtaining degrees (e.g., 20 percent of baccalaureates desired a general education).

ABSTRACTS

THE ANATOMY OF A PRESIDENT'S INFORMATION SYSTEM

C. Thomas Innis
Shepard Braun
University of Cincinnati

With the financial health of many institutions of higher education in serious doubt, the need for improved administration has been coupled with a plea for more information and analysis of those factors critical to decision making. This paper deals with the work of a task force at the University of Cincinnati which conducted a comprehensive analysis of those factors which contributed to the university's present financial plight. Four areas were singled out for study:

1. Historical analysis of growth and expansion in the university budget
2. Projections of future income and expenditure
3. Control of future expenditure
4. Identification of data essential to future decision making.

The work of the financial task force is examined in light of the decision framework of a university president's office and the type of information concerning various aspects of the university operations required for improved management of the institution. The authors argue that information systems as they are presently conceived lack the flexibility necessary to respond to the radically shifting financial climate with which many colleges and universities find themselves confronted. To a great degree, the utility of information systems is hampered by the traditionally long lead time necessary for development and implementation. Institutional resources would be better spent in increasing the depth of institutional studies capabilities.

The paper concludes with a discussion of a model for controlling the flow of information related to critical decision making by a university president. It is suggested that decision making at the executive level requires a unique configuration of information.

DETERMINANTS OF INSTITUTIONAL COMPARABILITY

Stefan D. Bloomfield
Oregon State University
Allan L. Service
National Center for Higher Education Management Systems

Increasing pressures for accountability in higher education, coupled with a growing appreciation for sound institutional management practices, are producing an accelerated demand for data from comparable institutions. The conviction that such data can better inform the decision-making process has motivated a considerable effort to develop procedures and formats facilitating the interinstitutional exchange of information. However, little has been written on the fundamental concept of comparability itself—the ways in which institutions are comparable and how such comparability can be recognized and utilized. This paper discusses the factors determining the comparability of institutions of higher education. In particular, two diametrical definitions of comparable institutions are evaluated. The first relies upon the acknowledged value of learning from the experiences of others in similar circumstances and defines as comparable those institutions that are (or have been) faced with essentially the same set of decision alternatives. The second interpretation admits that insights often accrue from close examination of fundamentally unlike entities and defines as comparable any set of institutions chosen for analysis, without regard to their degree of similarity to the subject institution.

UTILIZING MANPOWER SUPPLY AND DEMAND PROJECTIONS IN POSTSECONDARY EDUCATION

Donald M. Norris
University of Texas at Austin

In recent years, considerable attention has been focused on manpower issues in postsecondary education. Manpower supply and demand studies range all the way from occupational surveys that emphasize the demand for vocational manpower to projections that assess the supply and demand for Ph.D.'s in academia. In addition to their renewed popularity, manpower studies have undergone technical improvements that extend the promise of providing more accurate and timely information in support of educational decision making.

The purpose of this presentation is twofold. The first portion briefly traces the development of manpower studies in education to suggest how the current state-of-the-art developed. This is important because past failures at accurate manpower projection have been caused largely by technological limitations and by faulty assumptions that have often mirrored conventional educational wisdom.

The second portion of the presentation explores some of the inherent limitations to using manpower studies in postsecondary education. Some of these pitfalls relate to methodology and to the usability of information that is provided even by today's improved projections. Others focus on the sort of time frame needed for educational decision making. Others pertain to the assumptions about student marketplace behavior that are made by different projections. The relative utility of manpower studies also varies by institutional setting.

The presentation concludes by attempting briefly to outline new research initiatives that may be leading to information that will assist future manpower studies.

ONE-YEAR ENROLLMENT PROJECTIONS BASED UPON SURVEYS OF STUDENT INTENTIONS

Matt Steele
University of Miami

In a recent NCHEMS article entitled *Higher Education Enrollment Forecasting* (by Paul Wing), the major forecasting techniques applicable to higher education were discussed. The various curve fitting and causal methods were presented. These latter methods are the ones most widely used at present, and they will continue to be widely used, of course. However, as was emphasized by Wing, all of these methods are based upon past or historical data and upon the assumption that past trends will continue into the future. But what happens when trends change unexpectedly, as was the case when the attitudes toward higher education of the general public and of potential students changed in the early 1970s? What happened was that the major projections for the early 1970s were higher than actual enrollment. The general problem is that of predicting turning points.

According to the NCHEM's article, one answer to this shortcoming of the traditional techniques is to begin using surveys of student intentions in regard to future attendance plans. In the fall of 1972, such a series of surveys was begun by institutional research at the University of Miami. During the period since 1972, seven surveys have been conducted and regression equations derived, relating the correlation between the percent of students who indicate intention to return and the percent who actually do so. The survey has accurately predicted a major turning point in University of Miami enrollment; that is, a reversal from a declining to an increasing enrollment.

ADMISSIONS AND ENROLLMENT PLANNING: STRATEGIES FOR DETERMINING THE SIZE AND COMPOSITION OF THE STUDENT BODY

Thomas J. Palmer
William P. Fenstemacher
University of Massachusetts at Boston

In a period of a stable or declining college-age population, postsecondary institutions must develop innovative recruitment and admission strategies for achieving the desired enrollment levels and population mix. The University of Massachusetts at Boston (UMB) has developed enrollment objectives consisting of goals concerning not only overall enrollment level but also the characteristics of the student body. The university is committed to enrolling a student body which is representative (in terms of sex, race, and income) of the general population in the Boston-metropolitan area.

The size of the student body and enrollment levels for each college are determined by the campus and are related to the expected level of funding by the state legislature. Thus, overall enrollment level is largely predetermined in our planning process, and the university must develop strategies for identifying and enrolling sufficient numbers of students to meet the desired enrollment level, but students who are also representative of the population in the Boston metropolitan area.

A planning process is being developed that is based upon four types of information: (1) demographic population characteristics of the Boston area available on U.S. Census tapes, (2) secondary and postsecondary enrollment projections for Massachusetts, (3) historical data on the UMB applicants pool, and (4) demographic data on the currently enrolled population of the university.

This paper describes the techniques used for determining admissions targets, illustrates the process used to provide information vital to an admissions recruitment program, and describes the ways such data can be used to alter recruitment efforts and to fulfill an institution's enrollment objectives.

STUDENT ACCESS AND INSTRUCTIONAL QUALITY IN A TIME OF FISCAL CONSTRAINT

Eugene Craven
Karen Becklin
University of Wisconsin System

Can institutions of higher education continue the traditions of open access *and* quality instruction as financial resources become increasingly scarce, or must institutions choose between maintenance of student access to educational opportunity and maintenance of the quality of higher education services provided?

This policy dilemma is examined by specific reference to the University of Wisconsin (UW) System which, when confronted with this choice in April 1975, reluctantly elected to establish quality-safeguarded enrollment ceilings for each institution, leading to a denial of institutional access to a number of qualified Wisconsin residents in the fall of 1976.

This action raised an important policy question: What impact has the enrollment ceiling policy had upon student access to educational opportunity? In order to assess this policy question, the university undertook a telephone sample survey of those students who were judged qualified for admission but who were denied admission due to institutional enrollment ceilings.

The study sought answers to several policy-related questions:

1. How many students were denied access to the UW System due to the enrollment policy?
2. What happened educationally to those prospective students who were denied access due to the enrollment policy?
3. Was the impact of the enrollment ceiling policy greater upon the applicants at certain institutions due to program uniqueness?
4. To what extent did denial of access to a UW institution impact students' educational plans?

The results of this study served as a primary input into the university's decision concerning continuation of the policy of limited instructional access.

THE SCOPE OF BARGAINING IN FOUR-YEAR STATE COLLEGES: AN UPDATE

Gerald H. Kramer
Pittsburg State University, Kansas
John W. Creswell
Oklahoma State University

The purpose of this study is to examine written agreements between four-year state colleges and bargaining agents representing faculty during the 1973–74 and 1975–76 academic years to determine the scope or range of topics included in the agreement and to determine if the scope had expanded over time. This study brings up to date a paper concerned with the scope of bargaining in four-year state colleges during the 1973–74 academic year that was presented at the Association for Institutional Research Sixteenth Annual Forum in Los Angeles in May of 1976.

Traditionally, scope of bargaining has been associated with the range of issues included in negotiations between parties to a labor agreement. Scope is often the focal point of controversy; frequently, college administrators look upon an expanding scope as an infringement on their rights to manage. To determine scope, unions tend to utilize so-called model contracts in presenting their demands to administrators. One such model is suggested by Michael H. Moskow. The thirteen Moskow criteria operationally define scope of bargaining and are used in this study to analyze the written agreements.

Research questions are formulated by relating the scope of negotiations for each written agreement to institutional and collective bargaining process variables. These institutional and process variables are: size of the institution (undergraduate enrollment), growth or decline in unergraduate enrollment, type of faculty organization (AAUP, AFT, NEA), coverage of the agreement (multi-institutional or single institutional), composition of the bargaining unit (heterogenous or instructional only), nature of state legislation (meet-confer or collective bargaining law), third-party intervention clauses, and presence of binding arbitration clauses.

MONITORING TRENDS IN FACULTY SALARIES

H. Paul Greenough
Marshall University

For four years, we have been computing a nonparametric index of discrimination based on the Mann-Whitney test, initially proposed by Gastwirth and slightly modified by the author. This index tacitly assumes equally qualified groups, however, so we have recently been validating it with regression models.

The regression models use various combinations of independent variables, including academic rank, academic experience, highest degree held, department of employment, college of employment, and so forth. We used the sequential sum of squares method to subtract out the effects of these and other variables; the remaining variation was partitioned into that accounted for by sex and the residual variation. After controlling for the salient variables, we found that sex was not a significant predictor of salary. In the course of the study, we were also able to answer questions concerning salary differentials vetween departments, between degrees, by experience, and by nonteaching duties. We have recently begun to coalesce departments within similar disciplines in order to increase the sample size. Results of this are also reported.

PLANNING FOR FACULTY FLOWS

Gerald W. McLaughlin
James R. Montgomery
Alvin W. Smith
Virginia Polytechnic Institute and State University

This paper offers an alternative to previous procedures used in projecting faculty flows. This alternative is similar to prior work in that it includes the personnel activities of attrition, promotion, and tenure. It differs from other models by using data on the average demographic characteristics of each type of faculty, unique by college, by level (for example, professors in agriculture or professors in arts & sciences). These data are then used to predict the proportion of the group which will be promoted, or tenured, or leave each year.

In this modeling procedure, for example, the proportion of agricultural professors who remain as faculty members is a function of such professors being in agriculture, their average age, and their amount of experience relative to others in the same rank. The proportion promoted is a function of college, derivation of salary from average salary at a given rank, and rank. The average years of experience and age of those leaving, used to update experience and age, is a function of college, rank, and tenure. The number tenured is a function of the number in the last year of probation and a policy decision on the approximate proportion of this category who will receive tenure. Input data include the number and average age of tenured and untenured faculty hired at each rank into each college. Default parameters exist for these if one wants to assume continuation of prior practices.

The model has been tested and found to provide a good fit with actual faculty characteristics. The final section of the paper reviews areas requiring further development.

A GOAL-PROGRAMMING MODEL FOR FACULTY TEACHING LOAD EQUALIZATION

Robert T. Lewis
Georgia Institute of Technology

In a university where program enrollments are changing and restrictive faculty recruitment policies are in effect, wide variations in faculty teaching loads develop over time. Academic managers can respond to this situation in several ways. One response might be to encourage the sharing of faculty between schools and colleges in order to teach courses that are similar in content. Before implementing such a policy, it would be useful to have some measure of the equalization in teaching loads that would result. One type of model that provides a framework within which one can investigate the policy of sharing faculty is a goal-programming model (a variation of linear programming). The goal-programming model discussed in this paper has as its objective the minimization of the sum of the surplus (too much) instructional capacity and the slack (too little) instructional capacity for all departments. Its constraints are the number of faculty available in each department and their ability to teach in other departments. For the data used in testing, which comes from a real setting, significant reductions in teaching load variations result from application of the model. Also, the model is extended to incorporate faculty teaching preferences. With this addition, the need for differentially weighing faculty preferences and instructional loads becomes apparent. Hence, in one model three elements of short-range instructional planning are combined. They are: (1) the demand for instruction, (2) the faculty available to satisfy the demand and their work loads and preferences, and (3) the priorities for resolving conflict between the first two elements.

CONTEXT OF RESEARCH AND PLANNING IN HIGHER EDUCATION: AN ECOLOGICAL VIEW OF PLANNING IN HIGHER EDUCATION—THE MACRO SYSTEM IMPLICATIONS FOR INSTITUTIONAL PLANNING

Alex J. Ducanis
Mary Ann Hvizdos
University of Pittsburgh

Planning is a means of rational assessment of what it is we wish to do or be and the means necessary to reach that state. It is a process of deciding which of several alternative futures we wish to have.

A plan is a framework within which development occurs. The plan presents opportunities which will permit institutional improvement to a greater extent than institutional development on the basis of expediency. The plan is a statement of beliefs concerning the scope and direction of movement of an institution.

Plans in higher education, at least during the postwar period, were concerned primarily with the rapid increase in numbers of students and the provision of educational facilities for them. While numbers are still a concern, qualitative and contextual considerations are now becoming more relevant. Planners are becoming slightly more sophisticated in their approach to the planning process. It is now probable that plans will pertain more to the qualitative aspects of the institutional mission than with the quantitative, as was the case in the 1960s.

The planning process, of necessity, must recognize the existing situation on both a current and historical basis, for planning takes place within the context and will in turn change the contextual variables. Recognition of those factors over which the planner has varying control (e.g., birthrate, government policy) must be part of the planning process.

Higher education is reviewed as a subset of the ecosystem with reference made to its interaction with other parts of the system. An attempt is made to develop a conceptual base which may be useful to planners in dealing with the multitude of factors in the environment which may have an effect upon institutional planning. Specifically, the paper examines population trends, economic and social conditions, technological development, public policy and political conditions as factors which have had an impact upon the planning in higher education in the past as well as the possible impact of such factors in the future. Planning models are discussed and comparisons made between selected plans (both institutional and systemwide) and the actual outcomes of those plans.

THE MISSING LINK IN INSTITUTIONAL RESEARCH

William D. Cohen
University of Washington

This paper proposes and examines the missing link to the current institutional research (IR) typology of strategies for dealing with everyday crisis, a theory of stress utilization. Operationalizing this concept provides a mechanism whereby offices of IR could increase their functional efficiency through recognition and study of situations and/or tasks which lead to stress in administrative personnel, including IR officers.

The study, in progress, evaluates higher education administrator reaction to tension-producing situations or tasks, i.e., potential stressors which generate the crisis atmosphere characteristic of many IR offices. The situations typify the IR-administrative relationship where IR offices react to exigencies or pressures delegated to them by administrators. Tasks were developed from five areas of concentrated administrative decision-making activity—typically demanding a constant flow of relevant information from offices of IR. Areas are: (a) academic program review, (b) faculty position allocation, (c) institutional goal setting, (d) faculty performance evaluation, and (e) budgeting. The study explores a potential causal relationship between the situational tasks and varying levels of autonomic indices of stress (e.g., heart rate, respiration rate, and blood pressure), specific IR techniques or strategies, and the quality of administrative decision making.

Study of administrative performance relative to specific situational tension production may suggest means to achieve more effective IR staff utilization, more functional communication networks, and more efficient IR means of data assimilation and information production. The net result may be increased efficiency in information transmission—measurable in quality and acceptability of administrative decision making.

DEVELOPMENT AND APPLICATION OF A MODEL FOR EFFECTIVE USE OF INSTITUTIONAL RESEARCH FINDINGS: A LONGITUDINAL CASE STUDY

Zita M. Cantwell
Brooklyn College of the City University of New York

This paper presents data relevant to the development and application of a model for effective use of institutional research findings in the area of curriculum evaluation in higher education. The model, which has potential for international applicability, rests on several premises. First, the educational mission of the higher education institution is of primary significance. Second, implementation of this mission must be characterized by flexibility and reflect responsiveness to needs of faculty and students, cost constraints, long-range higher education planning, and broader issues, e.g., short- and long-term economic outlook. Third, curriculum evaluation by an institutional research facility can have a meaningful impact only when a defined and functioning relationship exists and is maintained between the institutional research office and the academic department—its faculty and students.

The presentation is in the form of a longitudinal (1968–1976) case study of the manner in which one function of institutional research, evaluation of the effectiveness of curriculum in a given academic discipline, has had, and continues to have, a significant and identifiable impact on academic policy decisions related to curriculum study, review, amendment and revision, as well as development. The longitudinal case study presentation has reference to seven research studies and a systematic design for research which have been completed by institutional research personnel in cooperation with faculty and students of the academic department. This research work has contributed directly to a pilot curriculum revision, a major curriculum development, and continuing curriculum review within one academic discipline.

DETERMINING REALIZABLE DEMAND FOR NEW ADULT, CONTINUING, AND NONTRADITIONAL POSTSECONDARY PROGRAMS

George J. Nolfi
University Consultants, Inc.

In this paper, the several approaches to the analysis of need or of demand for adult learning opportunities which have been applied in several states are reviewed and discussed. The assumptions and pitfalls of adult education demand analysis are examined, particularly insofar as the difference between estimated demand and the enrollments actually realizable are concerned.

AFFECTIVE DEVELOPMENT OF ADULT STUDENTS

Laurence C. Lipsett
A. Nancy Avakian
Empire State College

Colleges profess to promote intellectual development in their students. Some also claim to have an influence on students' personality developments. A study was undertaken to measure affective changes in adult students in traditional and nontraditional postsecondary educational institutions.

The results of the study indicated that students in individualized external degree programs, such as that offered by Empire State College, showed positive changes in overall affective development, while different groups of adult students in conventional college programs showed no changes during the same pretest and posttest period. In addition, differentiation in affective changes among Empire State College students were found on the bases of sex, age, occupation, field of academic concentration, employment, and enrollment status. Older students tended to rank higher in most aspects of affective development. There was a tendency for women and younger students to score lower on the pretest scales and to change more than men and older students. Students in human service areas of study tended to rank highest in these factors: increasing awareness and self-understanding and understanding others. Business students ranked highest in [illegible] factor, self-consistency.

Since instruments for measuring affective factors are not readily available, an important result of this study was made in regard to measurement technology. Two instruments were developed, the Q-sort instrument and the paired comparison. Neither instrument showed especially high reliability; nonetheless, both were capable of measuring factors in the affective domain. The forced-choice, paired comparison instrument borrowed the flexibility of item construction found in the Q-sort instrument and results were obtained with less resistance by subjects and in less time.

A TELEPHONE APPROACH TO NEEDS ASSESSMENT

George R. Moore
Chemeketa Community College

Today, as compared to the decade of the sixties, community and junior college leaders are devoting much attention to the concept of community-based education. Basically, this concept suggests that the college can work with the community to define learning needs more effectively. It also implies that solutions to meeting expressed learning needs can become more identified and that the solutions will be better supported and understood by the community.

To address this issue, an ad hoc planning group of Chemeketa Community College staff was organized in the fall of 1975 to determine the most appropriate method for conducting a comprehensive needs assessment of district residents.

The general purpose of this paper is to describe the planning and implementation of a telephone approach to assessing community attitudes, opinions, and beliefs. More specifically, this paper describes the criteria used to select the method, the objectives of the survey, the various stages of implementation, and the evaluation of the work as perceived by residents, staff, and budget planners.

INFLUENCES OF NON-CANADIAN-TRAINED FACULTIES UPON PROGRAM CONTENT

Charles H. Belanger
Université de Montréal

This study was an attempt (a) to assess the dependence of selected Canadian institutions upon foreign countries to train their academic staff, (b) to determine the relationship between non-Canadian-trained faculties and program content in selected disciplines (economics, history, political science, and sociology/anthropology), and (3) to appraise the progress toward the Canadianization of programs over the past five years. After obtaining data related to the country of training for each faculty member and determining the number of Canadian content-oriented courses in the department corresponding to each faculty member, a statistical analysis was conducted to find out whether or not there was a relationship between these two variables.

AN EXAMINATION INTO THE FEASIBILITY OF USING A MARGINAL COST-BASED MODEL FOR STATE-LEVEL HIGHER EDUCATION BUDGETING

Edward H. Lyell
University of Colorado

This paper examines attitudes of college administrators and state budget officers toward the information provided by a macro marginal cost-based higher education model. A macro model has been developed based upon differentiating costs into fixed and variable. The model is designed to aid in examining policy issues regarding the funding of public higher education. The macro marginal cost model permits examination of policies related to the level of fixed cost which can be attained without eliminating institutional flexibility and of policies to choose which institutions should grow or decline in order to minimize state cost.

The author developed the need to examine marginal cost in making resource allocation decisions based on his literature review on higher education costing and budgeting and his own work with a state coordinating commission and legislative budgeting committee.

The marginal costing model uses the SPS (formerly SPEPM) modeling framework developed at NCHEMS. The model is run using data from several institutions to develop an understanding of institutional characteristics which may be correlated with institutional marginal cost behavior.

An extensive bibliography on marginal costing is also presented. A section on research extensions includes discussion on the need to explore marginal cost techniques for institutional analysis.

COST-EFFECTIVENESS OF TECHNOLOGICAL INNOVATION IN HIGHER EDUCATION: THE ROLE OF INSTITUTIONAL RESEARCH

Leslie Wagner
Polytechnic of Central London

Institutional research into media innovation has concentrated largely on the two major areas of cost and educational effectiveness. This paper studies costs, primarily, and consists of three parts: The first is a survey of the results of research by the author and others into the cost-effectiveness of technological innovations in the United States and United Kingdom higher education institutions. Among the innovations covered are a computer-assisted learning project, a distance-learning audiovisual project, as well as the United Kingdom Open University. The second is a study of the implications of cost-effectiveness analysis for relationships with funding bodies and for institutional decision making, particularly decisions concerned with establishment, closure, expansion or contraction. Finally, there is an analysis of the role of institutional research as a management and administrative tool and the problems indicated by the case studies in reconciling managerial and research objectives.

THE GRADUATION EXPERIENCE OF DISADVANTAGED STUDENTS IN THE SENIOR COLLEGES OF CUNY

Lawrence Podell
City University of New York
Judith Piesco
New York University

The SEEK program is a compensatory effort of the City University of New York (CUNY) to provide services intended to enable disadvantaged students to successfully complete their education at its four-year colleges. With the implementation of an open admissions policy, similar students began to enroll in the senior colleges of CUNY, making a comparative study possible. This paper concerns the retention and graduation of disadvantaged students (those in the SEEK program and those not accepted, by random procedures, into the program) in CUNY four, five, and six years after their initial enrollment.

FACTORS RELATED TO ATTRITION IN PUBLIC, URBAN COMMUTING INSTITUTIONS

Anita Kramer
William P. Fenstemacher
University of Massachusetts at Boston

This study is among the first attempts to determine the factors relating to attrition in public, urban commuting institutions. Most previous work has focused on attrition from private residential colleges or universities where a much more homogeneous student body is enrolled. The study was designed to explore the attitudes, perceptions, and experiences of students who have withdrawn from the University of Massachusetts at Boston (UMass/Boston). Three main areas in which a student moves while in school were examined: academic, social, and employment. The questionnaire used in this study was derived from past student and attrition studies, literature on attrition, and questions posed by the particular environment at

UMass/Boston. A second part of the study involved a control group—students who have not withdrawn from the university.

The results of the study show some differences between factors found important in traditional institutions' attrition rates and those factors that influence UMass students to withdraw, particularly those involving various subgroups of the population. The university includes a higher percentage of older, self-supporting, and married students with family responsibilities. It is these characteristics that often influenced, in numerous ways, the students' perceptions, commitments, and integration into the university community and, hence, their decisions to withdraw. The findings also point out that the group of withdrawals and the group of persisters do not differ significantly from each other in terms of these characteristics. It is the complex interrelationships among these variables and the university environment that influence some students to withdraw while others remain in school.

In addition, the problems of servicing and supplying information to a student body whose time on campus is limited, and whose awareness of the university environment is subsequently affected, was made apparent in this study.

Although the study was performed at one institution, the development of the questionnaire and the issues that are covered ensure that both the findings and the resulting policy recommendations can be useful to other urban commuting institutions.

"NUMERUS CLAUSUS" IN WEST GERMANY—PROBLEMS AND SOLUTIONS

Eberhard Jobst
Bundländer Kommission für Bildungsplännung und Forshungförderung, West Germany

Free access to higher education is generally guaranteed by constitutional law. Demographic developments and the relative rise of university entrants have led to serious problems in recent years. In spite of increased capacities, the number of applicants exceeds the number of available places in many study areas. Therefore, "numerus clausus" regulations have come into effect, thus limiting access to higher education.

Reliable criteria to guarantee equal chances for all applicants are still missing. Various means have been tested or are being considered for introduction. Measuring the capacity of universities is equally difficult but necessary for the effective use of the available places in higher education.

Pedagogical repercussions and social implications as well as court rulings necessitate an immediate change in admission regulations.

Various measures undertaken in the past and current proposals are discussed. Also, emergency measures until 1990 when the number of students will drop sharply is taken into consideration. In addition, some thought is given to a prospective disequilibrium between the educational sector (university output) and the labor market.

PLANNING ACTIVITIES OF GERMAN UNIVERSITIES WITHIN THE FRAMEWORK OF FEDERAL LEGISLATION

Anneliese M. Grueger
Universität Düsseldorf, West Germany

The educational mission of West German universities is ensured by the effectiveness of partial planning. Mainly, however, this is on a short-term basis and primarily in the field of budgetary operations and commitments. If the partial planning is now meticulously regulated (by laws, ordinances, and enforcement by administrative courts), it carries an imminent tendency to outgrow its initially intended scope. This development is characterized by the existence of a great number of plans of many kinds and shapes. The obvious lack of coordination among the federation, the states and the universities tends to impede the formulation of basic principles and operational purposes for long-term planning. The constitutional structure of the Federal Republic, where the main planning authority remains with the respective state legislation and administration, naturally limits the regulatory role of federal legislation. Recent federal legislation, however, provided a framework for the integration of planning with special reference to the incorporation of cost measurement.

COORDINATING STATEWIDE EDUCATIONAL NEEDS: A SYSTEMS APPROACH

James J. McGovern
Illinois Board of Higher Education

The paper presents a systems analysis of various educational issues such as public vs. private college funding, student-aid formulae, nontraditional credits vs. education and the hierarchy of needs for personal development, adult education and professional training. The theme is the interaction of the various parts and forms of higher education. The systems approach considers the total environment (e.g., biological ecology, city planning, etc.) and is an *unknown necessity* for effective research planning and budgeting in a multicampus or comprehensive setting.

FORUM PAPERS EDITORIAL COMMITTEE

Robert H. Fenske, Editor and Chairperson (Arizona State University)
Paul J. Staskey, Coeditor (Northern Arizona University)
W. Keith Evans (Johnson County Community College)
William P. Fenstemacher (University of Massachusetts-Boston)
Lawrence R. Ladd (Boston University)
Larry H. Litten (Carleton College)
James S. Martin (University of Colorado)
Donald M. Norris (The University of Texas at Austin)
Joseph G. Rossmeier (Northern Virginia Community College)
Barry L. Snowden (Athabasca University)

PUBLICATIONS BOARD

Marvin W. Peterson, Chairperson (University of Michigan)
Alfred Lynwood Cooke (Institute for Services to Education)
Mary E. Corcoran (University of Minnesota)
John A. Lucas (William Rainey Harper College)
James R. Montgomery (Virginia Polytechnic Institute and State University)
William M. Sibley (Mount Allison University)
Charles F. Elton (University of Kentucky)
Paul Jedamus (University of Colorado)
Douglas A. Mathewson (University of Nevada System)

AIR EXECUTIVE OFFICE

314 Stone Building, Florida State University, Tallahassee, Florida 32306
Jean C. Chulak, Executive Secretary